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ABSTRACT

This annual listing of research in mathematics education contains annotated citations of research papers and monographs dated 2000 and abstracted for the ERIC database. Journal articles focusing on the interpretation and implications of mathematics education research are also featured. An index of dissertations by institution and a list of journals searched are included. (Author)

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ED 482 988

RESEARCH IN MATHEMATICS EDUCATION 2000

Edited by

Michelle K. Reed
Douglas T. Owens

U.S. DEPARTMENT OF EDUCATION
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Preface

The annual listing of research in mathematics education for many years was published as an issue of the *Journal for Research in Mathematics Education*, a publication of the National Council of Teachers of Mathematics. Two annual research listings for 1994 and 1995 were prepared by the ERIC Clearinghouse for Science, Mathematics, and Environmental Education (ERIC/CSMEE) with the financial support of NCTM. This is the fifth annual research listing prepared solely by ERIC/CSMEE.

In this listing each entry has been classified with ***Major*** and *Minor* codes, and all entries are indexed by ***Major*** codes. Dissertation abstracts which appeared in *Dissertation Abstracts International* during 2000 have been listed. Journal articles reporting research, as well as journal articles focusing on the interpretation and implications of research, have been included in this publication. Papers and monographs dated 2000 and abstracted for the ERIC database have also been included. Additionally, an index of dissertations by institution and a list of journals cited is provided.

We sincerely hope you find this listing useful.

The Editors

Michelle K. Reed
Wright State University

Douglas T. Owens
Ohio State University

Key to Codes

Ach	Achievement
AdvM	Post-calculus mathematics
Aff	Affect
Alg	Algebra, pre-algebra
Anx	Anxiety (student's)
Arth	Arithmetic
A/S	Addition, subtraction
Assm	Assessment, evaluation
Att	Attitudes (student's)
Blf	Beliefs (student's)
Calc	Calculus, precalculus
Cltr	Calculators (general)
Clln	Classroom interaction
Comm	Communication
CAI	Computer-assisted instruction
Comp	Computers (general)
CC	Cross-cultural studies
Curr	Curriculum, programs
Decm	Decimals
D/R	Diagnosis, remedial mathematics
DscM	Discrete mathematics
Eqty	Equity
Eqv	Equivalence, proportions
Est	Estimation
Ethn	Ethnic, racial, cultural
Frac	Fractions, rational numbers
GCal	Graphing calculators
Gend	Gender differences
Geom	Geometry
Gift	Gifted (students)
Grpg	Grouping for instruction, cooperative learning
Impl	Implications of research, interpretations of research
Insv	Inservice teacher education, professional development
Int	Integers
IC	Integrated curriculum
Knw	Knowledge (student's)
Lang	Language, psycholinguistics
Lrnr	Learners (characteristics of)
LD	Learning disabled
Lrng	Learning, learning theories, cognitive development, constructivism
Manp	Manipulatives
Matl	Materials (texts, other resources)
Meas	Measurement
Mscn	Misconceptions
M/D	Multiplication, division
M/CBL	Microcomputer/calculator based laboratory
MMed	Multimedia
Mtcg	Metacognition, reflection
NSns	Number sense
Oral	Oral communication, classroom discourse
Patt	Patterns, relationships, math connections
Pers	Personality
Phil	Philosophy, epistemology
Plan	Planning, descision making
PlcV	Place value, numeration
Prob	Probabiliiy
Prf	Proof, justification
Prsv	Preservice teacher education
PS	Problem solving, reasoning
RaPc	Ratio, proportion, percent
Rep	Representations, modelling
Rsch	Research issues, methods
Revw	Reviews of research
Soc	Social factors, context, parents
Stat	Statistics
Styl	Learning style, cognitive style
TAnx	Anxiety (teacher's)
TAtt	Attitudes (teacher's)
TBlf	Beliefs (teacher's)
TKnw	Content knowledge (teacher's), pedagogical knowledge
Tchr	Teachers (characteristics of)
Tchg	Teaching (role, style, methods)
Tech	Technology (general)
Vis	Spatial visualization
Whol	Whole numbers
Writ	Writing, journals

Level Codes

ALL	All student levels
EC	Early childhood, K-4
EL	Elementary, K-8
HS	High school, 9-12
MS	Middle grades, 5-8
K-12	All school levels
PS	Post secondary
SE	Secondary, 5-12
TE	Teacher education, teachers
T	Teachers

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Dissertations in Mathematics Education Reported in 2000

Iwan Elstak, Glynda Rice, Jeremy Strayer, & Leigh Weiss, *The Ohio State University*

This section lists 295 dissertations in mathematics education research that were abstracted in *Dissertation Abstracts International* during 2000. Each entry is coded (see Key to Codes) with one to three **major** topic codes (in bold type) and any number of *minor* topic codes, as well as the grade level code (in parentheses). Studies related to preservice or inservice teacher education are indicated by the appropriate topic codes (Prsv.Insv). The level designated for teacher education or teacher studies indicates the grade level(s) at which the intern or teacher participants teach, followed by the level code, "T" for teacher or "TE" for teacher education. All entries are indexed by major codes at the end of the volume (see page 69). An index of dissertations by institutions is included at the end of this section (see page 41).

Abramowitz, Sarah Knapp. (1999). A computer-enhanced course in descriptive statistics at the college level: An analysis of student achievement and attitudes.(New York University). DAI-A 60/09, p. 3296, Mar 2000. [9946935]

Students taking introductory statistics using the SPSS computer package (n=64) outperformed students taking a more traditional introductory statistics course (n=52) on the final examination. No differences were found between the two groups with regards to attitudes toward statistics, nor were there differences for age or gender.

Stat, Comp, Att, Gend (PS)

Ahmadifar, Gholam H. (2000). *Impact of culture circles on minority high school students in mathematics.*(The University Of Oklahoma). DAI-A 61/02, p. 536, Aug 2000. [9962950]

Eight African-American students participated in a culture circle to investigate their experiences (self perception, negative stereotypes, and attitudes toward mathematics) in an Algebra II class. The study established an environment for positive change in student performance using the culture circle group meetings.

Ethn, Att, Soc, Alg (HS)

Ai, Xiaoxia. (1999). *Gender differences in growth in mathematics achievement: Three-level longitudinal and multilevel analyses of individual, home, and school influences.*(University Of California, Los Angeles). DAI-A 60/08, p. 2840, Feb 2000. [9940503]

A longitudinal study showed that between-gender differences in growth in mathematics achievement were smaller than within-gender differences. The average gender gap in growth rates was not significant, and the effect of mathematics attitude on mathematics achievement was stronger for boys than girls.

Ach, Att, Gend, TAtt, Soc (SE)

Alford, Marcia Hicks. (1999). *Achievement of high school students who repeat Algebra I during summer school and the regular school term.*(North Carolina State University). DAI-A 61/06, p. 2222, Dec 2000. [9974549]

The researcher investigated a range of issues related to summer school as an effective option for students to meet the Algebra I graduation requirement. Students taking summer school term were almost five times more likely to pass than students repeating the course in regular school but not better on end of course tests.

Alg, Tchg, Ach, Curr (HS)

Alghazo, Iman Mohammad. (1999). *A study of the technology competencies of preservice secondary mathematics teachers.*(University Of Illinois At Urbana-Champaign). DAI-A 60/11, p. 3882, May 2000. [9952949]

Technology standards have 21 components and students (n=28) showed average or greater competencies in 17. Students have significantly improved in word processing, spread sheets, computer skills, communications, graphing calculators, and webpage construction. No significant improvement was shown in multimedia, database, and presentation. Students were enthusiastic and would be prepared to teach with technology with more self-training.

Tech, MMed, Comp, Tchg, GCal (TE, SE)

Alsawaie, Othman Nayef. (2000). *A study of students' experiences and learning styles in advanced Mathematica-based college mathematics courses.*(University Of Illinois At Urbana-Champaign). DAI-A 61/04, p. 1332, Oct 2000. [9971011]

The researcher explored students' (n=180) experiences in advanced (post-calculus) Mathematica-based courses related to their

learning styles. Students preferred the Mathematicia to traditional approach. Calculus and Mathematica could accommodate all learning styles. There was no relationship between acheivement and learning style.

CAI, AdvM, Styl, Tech, Att (PS)

Armstrong, Anita Griggs. (1999). *An analysis of student placement into College Algebra.*(Texas A&M University-Commerce). DAI-A 60/10, p. 3621, Apr 2000. [9948269]

Students (n=657) who took the placement test and followed the recommendations were more successful in college algebra than students who did not. Taking intermediate algebra proved less effective than not taking it but taking college algebra. Significant correlation was found between placement scores and algebra grades, and between predicted grades and actual grades.

Alg, D/R, Assm (PS)

Arp, Kimberly Christine. (1999). *The relationship of preservice preparation to teachers' attitudes towards mathematics and teaching middle school mathematics.*(Texas A&M University). DAI-A 60/09, p. 3296, Mar 2000. [9943448]

This study showed significant differences between elementary- and secondary-certified teachers (n=243) with regard to the number of higher-level mathematics courses taken, the level of comfort with middle school mathematics course preparation, and the level of preparation for working with adolescents.

Prsv, TAtt, Tchr (SE, TE)

Ballon, Estela Godinez. (1999). *Math curriculum tracking and educational outcomes.*(University Of California, Los Angeles). DAI-A 60/08, p. 3158, Feb 2000. [9940487]

Prior mathematics achievement, student background, school composition, and student coursework are important factors in predicting what mathematics track students are placed in. Being in the college and honors mathematics track significantly increases twelfth-grade mathematics achievement and graduation rates. Mathematics track does not appear to play a role in explaining racial discrepancies in achievement.

Ach, Curr, Soc (K-12)

Barbato, Rosemary Ann. (2000). *Policy implications of cooperative learning on the achievement and attitudes of secondary school mathematics students.*(Fordham University). DAI-A 61/06, p. 2113, Dec 2000. [9975337]

This study compared the effects of cooperative and traditional methods on achievement, attitudes, and course enrollment plans of tenth-grade students (n=208). The class taught cooperatively had significantly higher mathematics achievement and showed more positive attitudes toward mathematics than the traditional group. Cooperative method was related to female desire to enroll in future mathematics.

Grpg, Ach, Att, Gend (HS)

Barger, Rita Hamlin. (1999). *The effects of instruction in recreational mathematics on attitudes and beliefs about mathematics of high school, low-achieving mathematics students.*(University Of Missouri - Columbia). DAI-A 61/02, p. 536, Aug 2000. [9962502]

Concern about the opinions of others, and the amount of time a student was willing to spend on a problem changed as a result of using recreational mathematics in a high school mathematics course. The study showed that student opinions and beliefs are difficult to change.

Att, Blf, Tchg, Mtl (HS)

Barlow, Angela Till. (2000). *A study of the use of the Learning Logic program in elementary algebra in a two-year college.*(Auburn University). DAI-A 61/01, p. 142, Jul 2000. [9958977]

No significant differences in achievement, attitude, or math anxiety were found between classes that learned algebra using the Learning Logic program (n=20) and a traditional algebra class (n=5). However, there was concern over the low power of the statistical tests.

Ach, Att, CAI, Anx, Alg (SE)

Barnet, Barbara Dombroski. (1999). *A comparison of the effects of using interactive WWW simulations versus hands-on activities on the conceptual understanding and attitudes of introductory statistics students.*(Iowa State University). DAI-A 60/11, p. 3940, May 2000. [9950077]

Students (n=127) in the World Wide Web simulations group showed no difference in understanding confidence intervals, sampling distributions, attitudes towards statistics, mathematics or computers compared to the hands-on activities group. Students exposed to both simulations and hands-on activities preferred simulations.

M/Med, Stat, Tech, Att, Comp (PS)

Bausch, Margaret Elizabeth. (1999). *A comparison of standard computer keyboard input to alternate keyboard input when using the constant time delay response prompting procedure during computerized mathematics instruction.*(University Of Kentucky). DAI-A 60/11, p. 3962, May 2000. [9948830]

There was no difference in the two keyboards as input devices or in number of sessions to criteria for (n=6) students identified as having learning disabilities in mathematics. Students made more errors but needed less time to reach criteria on the alternate keyboard. Four students preferred the alternate keyboard, and all preferred computer to pencil and paper.

CAI, Comp, LD, Tech (MS)

Bay, Jennifer Marie. (1999). *Middle school mathematics curriculum implementation: The dynamics of change as teachers introduce and use standards-based curricula.*(University Of Missouri - Columbia). DAI-A 60/12, p. 4354, Jun 2000. [9953844]

Successful implementation of standards-based curricula was related to teacher involvement in the process of implementation, choosing the curriculum, and participation in professional development. All teachers were concerned with the level of skill development that students needed beyond what was provided in the curriculum and made adjustments.

Curr, Insv, Plan, Soc (T, MS)

Beaudrie, Brian Patrick. (2000). *Analysis of group problem-solving tasks in a geometry course for teachers using computer-mediated conferencing.*(Montana State University). DAI-A 61/02, p. 537, Aug 2000. [9962225]

The researcher found that on-line communication between students (n=18) in a college geometry course was different for on-campus and off-campus students. Student communication phase level was independent of whether they were on or off campus. Positive correlations were found between phase level of the communication and number of messages sent.

Comm, Comp, Soc, Geom, AdvM (PS)

Beckett, Terri M. (1999). *Development of conceptual understanding of statistics for concrete thinkers in a constructivist learning environment.*(University Of Lowell). DAI-A 60/08, p. 2841, Feb 2000. [9942531]

A study of 101 introductory probability and statistics students showed that a constructivist learning environment significantly increases conceptual understanding.

Lrng, Stat, Msen (PS)

Bejarano, Carlos Esteban. (2000). *Personal teacher efficacy and Mexican-American student math achievement: A correlation study.*(Northern Arizona University). DAI-A 61/03, p. 888, Sep 2000. [9964019]

No relationship was found between teachers' personal efficacy and achievement of Mexican-American students. When student gender and teacher experience were factored in, still no relationship was found.

Tatt, Ethn, Ach, Gend (EL)

Bell, Dan K. (1999). *An investigation of the effectiveness of the use of computer animation on understanding transformations of the complex plane.*(The American University). DAI-A 60/07, p. 2414, Jan 2000. [9939991]

Interviews and written responses revealed that computer animations helped students (n=5) learn complex analysis most effectively for non-linear functions. The animation found animations useful in understanding functions.

CAI, Rep, Vis (PS)

Belloso, Rafael Segundo. (1999). *A measurement model using path analysis with latent variables to assess the student affective domain before the process of learning introductory statistics.*(University Of Northern Colorado). DAI-A 60/12, p. 4354, Jun 2000. [9955539]

Students' (n=301) emotions towards statistics cause a decline in motivation to do statistical work, and decreased motivation has a significant negative effect on the levels of commitment to learn statistics. Students need help to better understand and manage their emotions toward statistics.

Aff, Stat, Att (PS)

Berger, Sandra Lynn. (1999). *Opening the Gate: Changing the attitudes and practices of teachers through a constructivist professional development model.*(The Florida State University). DAI-A 60/12, p. 4354, Jun 2000. [9953966]

A professional development program called "Opening the Gate" (OTG) was administered to 48 teachers representing 31 of the 67 school districts in Florida. The design of OTG was constructivist in orientation based on Fosnot's principle of professional development. The study showed that participants did incorporate skills and knowledge from OTG into their daily practice.

Insv, TAtt, Tchg, Curr, Lrng (T, K-12)

Beyers, John Foster, II. (2000). *How do we get there from here? An investigation of NCTM standards-based reform and its implementation issues in an urban systemic initiative.*(The American University). DAI-A 61/06, p. 2223, Dec 2000. [9973421]

The greatest concerns among participating teachers (n=3) in an urban school about implementing the NCTM Standards-based curriculum and instruction were: being confident in their ability to teach the mathematics content in a way consistent with the framework, enough planning time, covering the curriculum, keeping students engaged, and managing the classroom.

Curr, TAtt, Plan (T, EL)

Biagetti, Stephanie Laura. (1999). *Developing algebra teachers' understanding of their students' thinking.*(University Of California, Los Angeles). DAI-A 60/10, p. 3622, Apr 2000. [9947015]

The researcher met the (n=8) teachers in groups where they ranked the strategies of their students on sophistication, formed frameworks for interpreting the results, and examined teachers' instructional practices. Teachers' participation and classroom practice were tracked. As a result the researcher characterized teachers' learning, and processes toward generativity.

Insv, Alg, Comm, TKnw (T, MS)

Biddlecomb, Barry Dean. (1999). *The initial number sequence as a mechanism for the construction of fraction schemes.*(University Of Georgia). DAI-A 61/06, p. 2223, Dec 2000. [9975122]

In the constructivist teaching experiment, the child had two distinct ways of operating: one in which he applied his initial whole number sequence and one in which he did not. When he was unable to apply his number sequence, he had to coordinate all four hypothesized aspects of constructing the fraction concept and this made it more difficult to construct fractional parts.

Lrng, Frac, Whol (EL)

Bluette, Chester L., Jr. (1999). *An evaluation of the effects of staff development for teachers who utilize multiple strategies with middle school students in mathematics and science.*(Saint Louis University). DAI-A 60/08, p. 2778, Feb 2000. [9942753]

Students whose teachers were trained to use multiple teaching strategies raised their scores on the Missouri Mastery Achievement Test. Teachers were able to modify their teaching style to fit many different types of students.

Insv, Tchg, Ach, Curr (K-12, T)

Boats, Jeffery John. (1999). *Linear algebra textbook implementing instructional technology.*(Carnegie-Mellon University). DAI-B 60/11, p. 5552, May 2000. [9949994]

The textbook employs the MATLAB software package to implement computer-assisted instruction using tutorial exercises. The exercises are designed to eliminate arithmetic and allow students to practice key concepts. The text covers material appropriate for a sophomore course in linear algebra with additional applications and an emphasis on linear transformations.

CAI, Matl, AdvM, PS (PS)

Bohn, Anita Perna. (1999). *Elementary school teachers' conceptualizations and practices of multicultural education and mathematics.*(Illinois State University). DAI-A 60/08, p. 2804, Feb 2000. [9942642]

Interviews and observations from 14 teachers showed that teachers' views of multicultural education are tied to their life experience, elementary school teachers are not in a good position to help minorities achieve equity in mathematics, and negative experiences with the culture of school mathematics shapes teachers' conceptualization of mathematics.

TAtt, TBlf, Eqty, Ethn (EL, T)

Bote, Lisa Anne. (2000). *A quest for voice: Understanding the connections between beliefs and experiences in the design of a mathematics methods course.*(Arizona State University). DAI-A 61/06, p. 2161, Dec 2000. [9976302]

This inquiry is a narrative analysis that interprets the beliefs and experiences of pre-service teachers during a 15 week Mathematics Methods course at Arizona State University. Data took the form of observations, journals, conversations, and documents. The writer's quest, as the instructor, to structure the course appropriately is also documented.

TBlf, Tatt, Prsv (TE)

Braddy, Linda Sue. (2000). *Constructing graphs to meet specified conditions: A generalizability study.*(The University Of Oklahoma). DAI-A 61/02, p. 537, Aug 2000. [9961563]

Implications of the study warn against assuming comparability in assessment items involving graphical representations of functions. Also, the study warns against using simple tests of differences in mean achievement to determine if test items are similar (n=32).

Impl, Rep, Assm, Calc, Mscn (PS)

Brandsma, Jane Ann. (2000). *Data collection and analysis: Examining community college students' understanding of elementary statistics through laboratory activities.*(North Carolina State University). DAI-A 61/03, p. 920, Sep 2000. [9964310]

Students who participated (n=40) in 10 data collection and analysis activities scored better on three tests over the content than control group students with teacher-centered instruction (n=38). No differences in student attitude, or final exam performance were found. Control group students had better long-term retention.

Stat, Lrng, Att, Ach (PS)

Breen, John Joseph. (1999). *Achievement of Van Hiele level two in geometry thinking by eighth-grade students through the use of geometry computer-based guided instruction.*(University Of South Dakota). DAI-A 60/07, p. 2415, Jan 2000. [9937371]

Pretest/posttest analysis (n=11) showed that computer-based guided instruction helped eighth grade students achieve Van Hiele Level 2 in geometric thinking and significantly improve understanding of standard geometric concepts. There was no significant improvement in the understanding geometric terms.

CAI, Geom, Lrng (MS)

Breunlin, R. James. (2000). *The effects of hypermedia-aided anchored learning upon the achievement and retention of polygonal area concepts in high school geometry.*(Loyola University Of Chicago). DAI-A 61/03, p. 921, Sep 2000. [9965329]

Average and remedial level geometry students had significantly better posttest scores and retention rates when part of a design a "Dream House" project (n=138) approach as compared to a traditional instruction control grou p. In the treatment group, differences in retention scores were not significant between ability levels.

Geom, CAI, D/R, Lrng (HS)

Brien, Nancy Johnson. (1998). *A study of the effectiveness of elementary algebra in preparation for intermediate algebra.*(Tennessee State University). DAI-A 60/08, p. 2841, Feb 2000. [9943843]

comparison test showed that the mean posttest scores in an intermediate algebra course were significantly different for students who first took an elementary algebra course versus those who tested right into intermediate algebra. The pretest scores were not significantly different.

Alg, D/R (PS)

Brogan, Patricia Jortberg. (2000). *Evaluating student achievement and attitudes using different learning modes.*(The Fielding Institute). DAI-A 61/06, p. 2266, Dec 2000. [9977111]

This dissertation evaluated a form of computer-based educational technology by using multiple methods, including a comparison of learning models used with community college students. The researcher concluded that it is important to view and to design instructional-based software in the context of an integrated teaching and learning system. Progress is being made with females and mathematics and computers.

CAI, Ach, Att, Gend (PS)

Brown, Dwayne Christian. (1999). *The effects of Peer and Group Education (PAGE ONE), a comprehensive compensatory program for students at-risk for school failure, on mathematics achievement and student attitude.*(University Of South Carolina). DAI-A 60/12, p. 4354, Jun 2000. [9952705]

PAGE ONE provided an academically stimulating environment which extended the instruction students received in their public school classrooms to after-school and summer school programs. The program did not result in greater mathematics achievement, neither did participation in the program result in better attitudes towards learning mathematics within its funding year.

Att, Ach, D/R, Soc (K-12)

Brown, Sybil Yvonne. (1999). *A journey into the problematic terrain of African American students and school mathematics.*(The Ohio State University). DAI-A 60/08, p. 2841, Feb 2000. [9941292]

This critical inquiry (n=6) showed that strong community support is important in correcting the inequities that African-American students encounter in mathematics class. Also, positive teacher and student attitudes are essential for student success, and teaching mathematics in context causes connectedness and ownership for the student.

Ethn, Eqty, Soc, Tchg (SE)

Browning, Arthetta Jane. (1999). *Questions of equity: Kentucky authentic assessment reading and mathematics results compared by sex and location.*(University Of Kentucky). DAI-A 60/11, p. 3978, May 2000. [9948837]

Results indicate no differences in mathematics and reading scores between urban and rural fourth and eighth graders. At the eleventh grade,

urban students outperformed rural students. All showed increases in mathematics and decreases in reading scores as they progress to higher levels. Girls outperformed boys at all grade levels.

Eqty, Gend, Assm, Soc (K-12)

Buckreis, William Frederick. (1999). *Elementary mathematics teacher subject matter knowledge and its relationship to teaching and learning.*(Oregon State University). DAI-A 60/12, p. 4355, Jun 2000. [9954850]

One teacher (out of three) was selected showing different levels of knowledge for multiplication and division. She had an incomplete understanding of the full range of division situations. Her students had more success on multiplication than on division and showed serious misconceptions on divisibility and division meaning and computation.

TKnw, Tchg, M/D, Mscn, Arth (T, EL)

Burns, Barbara A. (1999). *High school teachers' reactions to the implementation of the graphing calculator in Advanced Placement (AP) Calculus.*(State University Of New York At Buffalo). DAI-A 60/08, p. 2841, Feb 2000. [9943291]

Successful implementation of graphing calculators into AP Calculus courses is intricately tied to teacher attitudes toward the calculator, teacher expertise with the calculator, and teacher ability to give up authority.

Calc, GCal, TAtt, Curr (HS)

Butler, Frances Mary. (1999). *Fraction instruction for students with disabilities: Comparing two teaching sequences.*(University Of Nevada, Las Vegas). DAI-A 60/09, p. 3318, Mar 2000. [9946516]

This study showed that students with mild to moderate disabilities who used manipulative devices had better conceptual understanding of fraction equivalency. Students who received manipulative or representational drawings treatments of carefully-sequenced instruction used graphic representations to solve word problems, whereas students in the contrast group did not (n=113).

LD, Frac, Rep, Manp (MS)

Calhoon, Mary Beth. (1999). *The effects of computer-based test accommodations on mathematic performance assessment scores for secondary students with learning disabilities.*(Vanderbilt University). DAI-A 60/09, p. 3318, Mar 2000. [9944550]

Learning disabled students who have their performance assessment tests read and reread to them by either a teacher, computer, or by video have increased PA scores. No difference was found between teacher read, computer read, or computer read with video.

LD, Assm, Comp (SE)

Carrillo, Frank Arthur. (1999). *Math enrichment to prepare Latino high school students for university-level mathematics.*(University Of California, Los Angeles). DAI-A 60/12, p. 4355, Jun 2000. [9952457]

The lessons begin with references to Latino culture and Mexican games and students relate probability and area to their prior knowledge of the references. The four teachers reported there was positive interaction with the group activities in the lessons. There is no conclusive evidence that the lessons affected students' preparation for the SAT.

Ethn, Curr, Comm, PS, Eqty, Assm (HS)

Carvan, Moreen K. Travis. (1999). *Re-forming teaching: The enacted implementation of a model of systemic reform in science and mathematics education.*(University Of Cincinnati). DAI-A 61/02, p. 475, Aug 2000. [9960865]

The analysis of the Wright Connection Model provided evidence that the concepts that the NSF, designers, and participating teachers brought to the model were negotiated through discussion, not dialogue. Results of the study indicate that the patterns of communication produced no common understanding of essential elements and ways to enact them.

Curr, Comm., Insv, Tatt, Plan (T, K-12)

Cates, Brenda Boyette. (2000). *The effects of calculator-based laboratory activities on college algebra students' understanding of the function concept and graphing.*(North Carolina State University). DAI-A 61/03, p. 921, Sep 2000. [9964339]

An experimental (n=29) and a control (n=27) group of students were tested using O Callaghan's function model to describe a conceptual knowledge of functions. Results indicate the experimental group scores better in all areas, constructing and understanding concepts of functions.

Alg, M/CBL, Calc, Tech, GCal (PS)

Cerkovnik, Richard. (1999). *The effects of a microcomputer-based laboratories learning sequence on students' concepts of function in a college physics class.*(University Of Maryland College Park). DAI-A 60/08, p. 2842, Feb 2000. [9942947]

Learning sequences involving microcomputer-based learning activities helped physics students draw nonlinear graphs, recognize functions, increase understanding of an across-time view of functions, and understand that many different functions could be used in modeling the same relationship. The learning sequences also helped expose misconceptions.

Tchg, M/CBL, Patt, Msen (PS)

Chambers, Juanita Clay. (2000). *The impact of the Urban Systemic Initiative on mathematics and science education in the Detroit Public Schools (Michigan).*(Wayne State University). DAI-A 61/03, p. 825, Sep 2000. [9966128]

The initiative was examined from different perspectives. The study identified factors that influenced the development of an infrastructure for change. Standards-based instruction was implemented and an infrastructure created for a sustained effort for improvement.

Curr, Insv, Assm (T, K-12)

Chan, Patricia Meyer. (2000). *Am I smart enough? Bright high school girls in advanced mathematics.*(The University Of Wisconsin - Milwaukee). DAI-A 61/04, p. 1305, Oct 2000. [9969441]

This case study approached the problem of under representation of girls in higher mathematics through observations of two AP calculus classes (n=8), student, teacher and parent interviews, and analysis of documents and journals. Results showed that factors included encouragement, teaching techniques, knowledge of career possibilities, and emotional and academic support.

Gend, Eqty, Soc (HS)

Chizhik, Alexander Williams. (1999). *Equity in group collaboration on mathematics tasks: Can task structure influence race and gender status effects?*(University Of California, Los Angeles). DAI-A 60/07, p. 2366, Jan 2000. [9939003]

African-American students were ignored more than European-American students on single-answer group tasks, while this difference did not exist on variable-answer group tasks. Race-based differences in achievement were tied to race-based differences in giving explanations on group tasks. No significant gender differences were found.

Grpg, Gend, Ethn, Lrnr, Oral (HS)

Cho, Cheong-soo. (2000). *A Korean elementary teacher's beliefs about teaching and learning and its impact on interactions and norms in mathematics classroom.*(Oregon State University). DAI-A 61/05, p. 1772, Nov 2000. [9973872]

The researcher observed a veteran third grade teacher teaching mathematics to a class of 45 students in Korea. The analysis demonstrated a close relationship between the teacher's beliefs about teaching and learning mathematics and interaction patterns and classroom norms. The teacher's study group activity was a major professional development factor.

TBlf, Tchg, Insv, Ethn (T, EL)

Chung, Insook. (1999). *A comparative assessment of constructivist and traditionalist approaches to establishing mathematical connections in learning multiplication.*(University Of Missouri - Saint Louis). DAI-A 60/11, p. 3941, May 2000. [9950379]

The results from this study indicate that the students in both groups benefited from the different approaches and improved their understanding and multiplication skills. There was no difference between the two groups in achievement or understanding.

Lrng, M/D, Patt (EC)

Ciemanec, Karen B. Mauck. (1999). *High school mathematics teachers: Grading practice and pupil control ideology.*(Ohio University). DAI-A 60/12, p. 4372, Jun 2000. [9956769]

This study examines the correlation of high school mathematics teachers' (n=321) assignment of grades based on non-achievement factors and the association between teachers' need for classroom control. Results suggest that the context of the classroom contribute more to shaping teachers' grading practices than the teachers' orientation to pupil control.

Assm, Tchg, Clln, Tatt (T, HS)

Cmajdalka, Sandra Lynn. (1999). *Problem solving difficulties in mathematics: Examining five process skills in multidigit addition for Hispanic limited English proficient students.*(Texas A&M University). DAI-A 61/01, p. 62, Jul 2000. [9957407]

The only process skill that was problematic was estimating the final answer. The only process skills significantly related to arriving at the correct final answer to a problem were representing the problem and solving the representation. None of the five process skills was significantly correlated to any of the other four skills (n=74).

Ethn, D/R, Est, Rep (El)

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Coffey, David Charles. (2000). *An investigation into relationships between alternative assessment and pre-service elementary teachers' beliefs about mathematics.*(Western Michigan University). DAI-A 61/05, p. 1772, Nov 2000. [9973047]

A comparison of the pre- and post-belief surveys students in a mathematics course designed for elementary education that employed three different alternative assessments indicated that the mathematical beliefs of almost 50% of the students were affected by the alternative assessments. Seven informants believed that assessing in mathematics means paper-and-pencil tests.

Assm, TBlf, Prsv (T, EL)

Coffland, David Arthur. (1999). *Factors related to technology use by secondary geometry teachers.*(Idaho State University). DAI-A 60/11, p. 3973, May 2000. [9951338]

Four relationships were found to be statistically significant related to technology use. The number of geometry sections taught was inversely related to teacher computer use. Principal attitude and teacher attitude toward technology, teacher attitude towards technology and,the type of teacher technology training was directly related to technology use by teachers.

Geom, Tech, Clln, Insv (HS)

Cole, Donna Sue (Cope). (1999). *A study to determine the effects of a spiral mathematics method of instruction on fifth and sixth grade achievement as measured by the Texas Assessment of Academic Skills (TAAS) test.*(University Of Houston). DAI-A 60/07, p. 2415, Jan 2000. [9939680]

The spiral method of instruction significantly increases Texas Assessment of Academic Skills mathematics test scores when compared to the non-spiral method of instruction.

Ach, Curr (MS)

Collie-Patterson, Janet Maria. (1999). *The effects of four selected constructs of opportunity to learn on mathematics achievement of grade 12 students in New Providence, Bahamas.*(The University Of Southern Mississippi). DAI-A 61/02, p. 537, Aug 2000. [9960881]

There was a relationship between opportunity to learn and three selected components of teachers' characteristics, students' characteristics, and schools' characteristics, but not classrooms' characteristics. In terms of effect size, the results of this study show that students' characteristics made the largest contribution to mathematics achievement followed by classrooms' characteristics, schools' characteristisces, and finally teachers' characteristics (n=463 students; 52 teachers; 12 schools).

Ach, Tchr, Att, Soc (T, HS)

Collopy, Rachel Megan Buck. (1999). *The educative potential of curriculum materials and their contribution to the learning of elementary mathematics teachers.*(The University Of Michigan). DAI-A 61/03, p. 877, Sep 2000. [9965413]

Two case studies suggest that teacher learning through curriculum materials develops through a dynamic interplay between the teachers' beliefs, contextual variables, and the content for teachers and the pedagogical design offered by curriculum. One teacher made decisive changes in her beliefs and in her teaching. The other teacher's knowledge, beliefs, and practices remained stable.

Curr, TBlf, TKnw, TAtt, Tchg (T, EL)

Conner, Daniel A. (1999). *Gender differences in subjective task values in mathematics and their relation to course-taking intentions.*(Oregon State University). DAI-A 60/09, p. 3297, Mar 2000. [9944739]

Third scored higher than fifth graders with regards to subjective task values in mathematics. Although no significant gender differences were found, boys tended to blame factors outside their control, while girls blamed themselves.

Gend, Att, Blf (EL)

Cottrill, James Franklin. (1999). *Students' understanding of the concept of chain rule in first year calculus and the relation to their understanding of composition of functions.*(Purdue University). DAI-A 60/11, p. 3941, May 2000. [9951936]

This work studied calculus students' (n = 34) knowledge of and skill with function, composition of functions, differentiation and chain rule. These results are positive in the sense that Piaget and Garcia's triad method fits with the data. Differentiation was made between using and being able to explain the chain rule.

Calc, Lrng, Knw (HS, PS)

Craig, Dana Sue. (1999). *Preservice elementary teachers' problem posing and its relationship to mathematical knowledge and attitudes* (Oklahoma State University). DAI-A 61/03, p. 921, Sep 2000. [9963550]

Confidence in learning mathematics, motivation for mathematics, and usefulness of mathematics

were positively correlated with problem posing with multiplication of fractions, but not correlated with problem posing with division of fractions. Attitude toward success nor mathematical background were correlated with problem posing with multiplication or division of fractions (n=37).

Prsv, PS, TAtt, Frac, M/D (TE, EL)

Creed, Frederick Henry, III. (2000). *A comparative study of the use of spreadsheet software and graphing calculator technology in introductory statistics.*(Georgia State University). DAI-A 61/06, p. 2223, Dec 2000. [9977039]

Ten Advanced Placement Statistics classes were studied to determine whether the use of technology in a learning environment leads to greater conceptual understanding of introductory statistics topics. Comparisons showed that technology classes outperformed control classes on some topics and performed equally well on other topics.

Comp, Stat, GCal,, Tech (HS)

Crockett, Michele Denise. (1999). *Impact of dualistic rhetoric, lesson planning, and analyzing student work on elementary teachers' conceptions of mathematical understanding.*(University Of California, Los Angeles). DAI-A 60/07, p. 2415, Jan 2000. [9939071]

Teachers need to recognize how the bifurcation of traditional and reformed mathematical understanding, and teachers' definitions of "understanding" influences teachers' culture and instructional activities and how this bifurcation can be resolved. This study proposes that the resolution can be brought about through prolonged teacher dialogue.

TAtt, Insv, TKnw, Curr (T, EL)

Cronin, Jeremiah Stephen. (2000). *Does the Dine College Placement Examination in Mathematics predict future success in prediction of Dine college students success in mathematics?*(The University Of New Mexico). DAI-A 61/06, p. 2163, Dec 2000. [9976104]

The success of students in mathematics classes, placed there by the Dine College Placement Exam, was analyzed using student transcript records from 1991 through 1993. Thirty seven percent of students passed their first course and there was no correlation between placement test score and eventual achievement in college mathematics classes.

Assm, D/R (PS)

Cuellar, Roxane Yvette. (2000). *Examining five problem solving process skills in subtraction with Hispanic limited English proficient students.*(Texas A&M University). DAI-A 61/04, p. 1260, Oct 2000. [9968904]

The researcher investigated fourth grade bilingual students (n=74) on three-digit subtraction story problems with regrouping for five problem-solving skills: explaining the problem, estimating the final answer, representing the problem, solving the representation, and explaining the final answer. Estimating the final answer caused difficulties. None of the correlations among the five skills were significant.

PS, Ethn, Arth (EL)

D'Souza, Edward John. (2000). *AVID mathematics staff development and its effects on middle school achievement.*(The Claremont Graduate University). DAI-A 60/12, p. 4355, Jun 2000. [9956031]

This study assessed the effectiveness of the Advancement Via Individual Determination (AVID) program in California with 3000 students. Findings include non-AVID trained teacher's students scored higher on standardized multiple choice test while AVID teachers' students succeeded in open ended questions.

Insv, Ach, Curr, PS (T, MS)

Darby, Dana DeAnn. (2000). *A critical exploration of developmental mathematics students' conceptions of the role of mathematics in society.*(The University Of Oklahoma). DAI-A 61/02, p. 537, Aug 2000. [9962953]

Results show a questioning of the inclusion of academic content in mathematics curricula for non-mathematical degrees. Participants (n=7) wrestled with scenarios where mathematics was used in an ethically debatable way. Students need more opportunities to explore ethical issues related to mathematics.

Att, Blf, Comm, Knw (PS)

Davila Hernandez, Maria del Consuelo. (1999). *Socially shared calculus problem solving: Defining a culture.*(The University Of Texas At Austin). DAI-A 60/09, p. 3268, Mar 2000. [9947212]

A theory is developed to characterize student learning and interaction in calculus workshops. Students move from (1) high uncertainty to (2) immersion in the problems to (3) adjusting to peer interactions to (4) dynamic equilibrium.

Calc, Lrng, Grpg, PS (PS)

de Groot, Cornelis. (2000). *Three female voices: The transition to high school mathematics from a reform middle school mathematics program.*(New York University). DAI-A 61/04, p. 1332, Oct 2000. [9968421]

In grade 9, participants related their high school learning closer to their traditional elementary experience. In grade 10, they related more with their reform middle school experience: for example, doing proof is similar to explaining your thinking. They coped with increased competition and lack of student-to-student discourse by forming out-of- class support networks.

Curr, Lrng, Styl, Gend (SE)

DeCesare, Richard Patrick. (2000). *Indigenous mathematics of Native North Americans: A sourcebook for educators.*(Columbia University Teachers College). DAI-A 61/06, p. 2223, Dec 2000. [9976709]

The writer compiled a sourcebook recording samples of the indigenous mathematics of Native North Americans. Five jurors, who reviewed the sourcebook, indicated it would be appropriate for various age groups and in other subjects. About three fourths of the material was new to jurors.

Ethn, Writ, Matl (ALL)

Decker, John Timothy. (1999). *An examination of Kentucky school districts' instructional per-pupil expenditures and academic performance at the eighth grade level in mathematics and reading.*(University Of Kentucky). DAI-A 60/11, p. 3913, May 2000. [9948853]

The purpose of this research was to examine eighth grade schools (n=60) academic performance in mathematics and reading, and district instructional per pupil expenditure (IPPE) as a result of education reform in Kentuky. While schools with greater IPPE initially achieved higher, this difference quickly dissolved over six years.

Ach, Plan (MS)

Dell'Isola, Ida McCalip. (1999). *An investigation of the use of algebra tiles to introduce the basic algebraic concepts of integers, equations, and polynomials in community college developmental algebra classes.*(The University Of Tennessee). DAI-A 61/01, p. 119, Jul 2000. [9959268]

Students with no recent experience in the manipulative-based treatment group experienced greater retention than did students with no recent experience with manipulatives in the control group. The attitude of the manipulative group improved. There was no difference in anxiety between the groups (n=119).

Manp, Anx, Att, Alg (PS)

DeMille, Dianne Lynne. (2000). *A professional development project for elementary and middle school teachers to begin implementation of the California Mathematics Content Standards: An evaluative study.*(Walden University). DAI-A 61/04, p. 1332, Oct 2000. [9968778]

This case study was conducted to analyze two programs with a focus on algebraic thinking in grades 2 through 7, designed to increase teacher knowledge and lower mathematics anxiety. Changes in teacher behavior created a transfer of knowledge and enthusiasm to students that was reflected in significant improvement in matched-case student test scores.

TAnx, TKnw, Insv (TE, EL)

Diamantis, Maria. (1999). *The effects of a laboratory component in a mathematics content course for prospective elementary/middle school teachers.*(Columbia University Teachers College). DAI-A 60/07, p. 2415, Jan 2000. [9939480]

Prospective teachers who participated in interactive teaching activities during a mathematics content course developed more positive attitudes about teaching and learning mathematics. Also, the use of manipulatives enhanced student learning, and student beliefs about problem solving and mathematics changed because of their problem solving experiences.

Prsv, Att, Manp, Blf, TKnw (TE, EL)

Dimiceli, Vincent E. (1999). *Business calculus students' use of the graphing calculator.*(Texas A&M University). DAI-A 61/01, p. 119, Jul 2000. [9957415]

Students who perform poorly tend to have poor calculator skills and are reluctant to use the graphing calculator to help them learn mathematics. Those inexperienced with the calculator did not make connections necessary for mathematical understanding.

Geal, Calc, Rep, Lrnr, Patt (PS)

Dodsworth, Dianne Joyce. (1999). *Routine mathematical problems and mathematical inquiry in an elementary classroom: Tensions and struggles.*(University Of Alberta (Canada)). DAI-A 61/03, p. 921, Sep 2000. [NQ46832]

Classroom teaching practices such as modeling problem solving strategies, presenting mathematics as a linear process and presenting routine problems and students' beliefs about mathematics affect students' problem solving practices. Students reverted to number-oriented solving strategies after what the teacher described as an inquiry-oriented approach was presented.

PS, Blf, TKnw, Tchg (EL)

Drew, Keith T. (1999). *National vision and local practice: A discrepancy evaluation case study of one teacher's geometry class.*(Northern Illinois University). DAI-A 60/12, p. 4300, Jun 2000. [9955754]

Utilizing a new innovative curriculum based on NCTM Standards, the teaching and assessment practices of one geometry teacher were examined for the degree of congruence between actual practices and those described by the national Standards. Although there were some similarities to the NCTM Standards, there were numerous discrepancies.

Curr, Tchg, Geom, Assm (T, HS)

Drier, Hollylynne Stohl. (2000). *Children's probabilistic reasoning with a computer microworld.*(University Of Virginia). DAI-A 61/06, p. 2224, Dec 2000. [9975511]

Probabilistic reasoning in three nine-year-old children during a two-month teaching was investigated. Microworld tools have the potential to act as agents for children's development of intuitive-based probability conceptions. Dynamically linked multiple representations and flexibility in designing experiments facilitate an exploratory approach and enhance children's meaning-making.

Prob, Comp, PS, Rep (EL)

Duah-Agyeman, James Kenneth. (1999). *Secondary mathematics teachers' understanding of mathematical functions.*(Syracuse University). DAI-A 61/03, p. 922, Sep 2000. [9964521]

The effect of CBL-investigations on teachers' (n=11) conceptions of functions was examined. Approximately half of the teachers had a weak understanding of functions, holding a conception of functions that was primarily that of correspondence or dependence relation. Given the opportunity, teachers can become excited about teaching the concepts as envisioned in the NCTM (1989) Standards.

Insv, TKnw, Tchr, M/CBL (T, SE)

Durmus, Soner. (1999). *The effects of the use of the technology on college algebra students' achievements and attitudes toward mathematics: A constructivist approach.*(The University Of Texas At Arlington). DAI-A 60/10, p. 3622, Apr 2000. [9948001]

Six research hypotheses were developed to determine how the use of technology with a constructivist setting would affect college algebra students' achievements and attitudes. Students using the graphing calculators had significant gains on overall achievement and attitude and also had significant gains in process level ability scores.

GCal, Lrng, Alg, Ach, Att (PS)

Eisele, Rita L. (1999). *The relationship of math anxiety and educational cognitive style to achievement in a mathematics content course for preservice elementary teachers.*(Indiana State University). DAI-A 60/12, p. 4385, Jun 2000. [9955444]

This study was to investigate the relationship of anxiety and educational cognitive style to achievement in a mathematics content course for preservice elementary teachers (n=150). Using an abbreviated version of the Mathematics Anxiety Rating Scale (MARS) the researcher found that twelve of the educational cognitive style elements were significant in impact.

Anx, Ach, Styl, Prsv (TE, EL)

Eisenhardt, Sara Kathleen. (1999). *Trying on a new pair of shoes: Changing mathematics instructional practices and beliefs.*(University Of Cincinnati). DAI-A 60/07, p. 2416, Jan 2000. [9937534]

This research chronicles one teacher's process of reconceptualizing her mathematical instruction from a traditional to a more reformed emphasis. Participative action research empowered the teacher, and mathematical discourse created the context for this process.

Insv, Curr, TKnw, Tchg (T, ALL)

Eliaser, Norman Mitchell. (1999). *What constitutes a mathematical proof?*(Northwestern University). DAI-B 60/12, p. 6390, Jun 2000. [9953274]

This study focused on what problem solvers believe constitutes a legitimate mathematical proof. Participants generated or verified proofs for the four classes of claims generated by crossing quantifier with polarity. Common proof strategies involve using a numeric example, multiple numeric examples, or variables. Participants had trouble representing proofs.

Blf, Prf, PS (ALL)

Emfinger, Linda Kay. (1999). *Kindergartners' solution strategies for multiplication word problems.*(University Of Alabama At Birmingham). DAI-A 60/12, p. 4355, Jun 2000. [9956731]

This research describes and interprets the mathematical problem-solving processes of kindergartners (n=17) as they engaged in solving multiplication word problems and investigate the development of multiplicative thinking. Instruction following Piaget's (1965) constructivism theory, found kindergartners successfully solve multiplication word problems using a variety of counting and adding strategies.

M/D, Lrng, PS (EC)

Erickson, Kristine Irene. (2000). *The impact of inclusion: A comparison of reading and math achievement of general education middle school students in inclusive versus non-inclusive settings.*(Wayne State University). DAI-A 61/03, p. 944, Sep 2000. [9966137]

Does the inclusion of students with disabilities change the academic achievement of general education students? There was no significant difference in test scores between inclusion and non-inclusion students on subtests of the California Achievement Test.

LD, Ach (MS)

Ferdinand, Victor Allen. (1999). *An elementary mathematics methods course and preservice teachers' beliefs about mathematics and mathematical pedagogy: A case study.*(The Ohio State University). DAI-A 60/08, p. 2842, Feb 2000. [9941322]

This case study (n=3) found that preservice elementary teachers' attitudes toward mathematics changed little after completing their mathematics methods course. The researcher recommends that methods courses (1) address beliefs about the nature of mathematics, (2) encourage reflection, and (3) value theory.

Prsv, Att, Blf, Curr (TE, EL)

Fierros, Edward Garcia. (1999). *Examining gender differences in mathematics achievement on the Third International Mathematics and Science Study (TIMSS).*(Boston College). DAI-A 61/02, p. 584, Aug 2000. [9961577]

Internationally, at both grades 8 and 12, males tended to have higher achievement than females on items involving spatial representation, proportionality, measurement, and problems with no immediate formula. At grade 8, females outperformed males on items involving reading graphs, computation, and algorithmic problem solving. At grade 12, there were no items where females outperformed males, internationally.

Gend, Assm, PS, Meas, RaPc, Vis, Att (SE)

Folk, Sandra Pearl. (1999). *Understanding teaching for understanding in the mathematics classroom.*(University Of Toronto). DAI-A 61/01, p. 89, Jul 2000. [NQ45670]

Themes emerging from case studies of a beginning grade 7 teacher and an 25-year experienced grade 5 teacher were beliefs, practices, style, and knowledge on teaching for understanding. Teachers have unclear images of teaching for understanding. Factors within the context that teachers work add to the challenge of teaching for understanding.

TBlf, TKnw, Tchr, Tchg, Lrng (T, EL)

Fornof, Carol Ann. (1999). *An analysis of the relationship between the math readiness skills of primary students with developmental disabilities and selected math IEP objectives.*(The University Of Toledo). DAI-A 60/11, p. 3963, May 2000. [9951887]

The study examines the individual and collective data pertaining to children's (n=23) levels of cognitive development and their acquisition of targeted mathematics competencies. In the majority of children in the population studied, pre-requisite mathematics skills and the writing of IEPs were also identified as an area of significant concern.

LD, Lrng, Arth, Ach (EC)

Fortner, Trina Michelle. (2000). *The effect of gender and the term a course is taught in the block schedule structure on Stanford Achievement Test mathematics scores.*(The University Of Alabama). DAI-A 61/03, p. 864, Sep 2000. [9966689]

It is concluded that neither gender nor term impact the math scores on the Stanford Achievement Test (SAT) mathematics scores (n=219). The majority of students perceive that taking math second term will help them obtain a higher score on the SAT.

Gend, Ach, Alg, Geom (HS)

Fredricks, Jennifer A. (1999). *Girl-friendly family contexts: Socialization into math and sports.*(The University Of Michigan). DAI-A 61/02, p. 494, Aug 2000. [9959758]

Parents' ratings of their children's abilities and interests were strongly related to children's self and task beliefs, participation in organized sports activities, and math course taking over time.

Soc, Gend, Att, Blf (ALL)

Freshcorn, Eugenia Latham. (2000). *School transition and students' academic growth in reading and mathematics.*(The University Of North Carolina At Charlotte). DAI-A 61/03, p. 829, Sep 2000. [9967061]

The study examined academic growth in reading and mathematics among groups of students who make a school transition between grades three and seven. Students in the transition groups scored lower in their end of grade tests in both mathematics and reading than their peers in the non-transition groups at each grade level.

Soc, Ach, Lrnr (EL)

Gales, Mary Jane. (2000). *Relationship between constructivist teacher beliefs and instructional practices to students' mathematical achievement: Evidence from TIMSS.*(Indiana University Of Pennsylvania). DAI-A 61/01, p. 39, Jul 2000. [9959146]

Teachers' (n=520) constructivist and behaviorist beliefs and instructional practices have differing effects on students (n=10970) performance in mathematics. Some beliefs and practices are more closely related to students' achievement than others.

TBlf, Tchg, Ach, Lrng (T, MS)

Gann, Melinda Denise Downs. (1999). *The effects of the integration of thinking skills on preservice teachers' beliefs about mathematics and teaching mathematics.*(The University Of Southern Mississippi). DAI-A 61/02, p. 538, Aug 2000. [9960882]

Participants (n=8) in this study showed clear changes in their beliefs and conceptions about mathematics and mathematics teaching. The integration of study skills reinforced conceptual approaches and a willingness to use a variety of teaching techniques in math teaching.

Prsv, TBlf, Tchg, Tatt (TE, EL)

Garcelon, Carolyn Jane. (2000). *The pedagogical practices of elementary mathematics methods instructors in teacher education programs in California.*(University Of San Francisco). DAI-A 61/04, p. 1361, Oct 2000. [9970530]

Surveys and the content of course syllabi were analyzed to determine the degree to which methods instructors in 86 multiple subject teacher education programs practiced constructivist pedagogy in K-6 mathematics. The results showed that instructors model a combination of didactic and constructivist pedagogy.

Lrng, TKnw, Insv, Curr (TE, EL)

Gasiorowski, Jeanne Heindel. (1998). *The relationship between student characteristics and math achievement when using computer spreadsheets.*(West Virginia University). DAI-A 61/03, p. 922, Sep 2000. [9967178]

Kolb's Learning Style Inventory with Concrete-Abstract and Active-Reflective scales was administered to (n=114) students. Traditional instruction favored students toward the Abstract end of the scale, and students in upper socioeconomic groups. Spreadsheets can serve as a valuable cognitive tool for all seventh grade math students and in particular for those who have an Active learning strength and those with lower socioeconomic status.

CAI, Styl, Ach, Soc (MS)

Geist, Pamela Kaye. (1998). *Reforming mathematics teaching. Examining the relationship between instructional policy and a teacher's opportunities to learn.*(Michigan State University). DAI-A 60/07, p. 2451, Jan 2000. [9936544]

A series of case studies track one teacher's experience and illuminates ways in which elementary teachers encounter, interpret, transform, and implement ideas of reform. The researcher describes what the teacher learns, what influences the teacher's learning, and the impact of teacher learning on the understanding and enactment of reform. There needs to be a better link between teacher learning and reform efforts.

Curr, TKnw, Insv (T, EL)

Gerber, Sue. (2000). *Teachers' orientations and practices; students' mathematics achievement.*(State University Of New York At Buffalo). DAI-A 61/05, p. 1741, Nov 2000. [9967809]

Data from the Third International Mathematics and Science Study seventh and eighth grade U.S. students and their mathematics teachers were examined. Results indicate (a) teachers' practices are not related to students' achievement, (b) teachers' orientations towards mathematics are are not related to teachers' practices, and (c) teachers' orientations not related to achievement.

Ach, Tchg, TAtt (MS)

Giuliano, Gina M. (2000). *An analysis and assessment of the State University of New York Mathematics Alert Program.*(State University Of New York At Albany). DAI-A 61/06, p. 2122, Dec 2000. [9974987]

The Mathematics Alert Program (MAP), a mathematics placement testing program for high

school students, which was operated from 1993-1998 was described and compared to similar programs. Students at MAP schools performed better on Sequential III Regents Exams and earned higher grades in college mathematics.

Assm, Ach (HS)

Givens, Lynn Marie. (1999). *An examination of the necessity for students to take developmental algebra before college-level mathematics.*(The University Of Texas At Austin). DAI-A 60/09, p. 3248, Mar 2000. [9947449]

Students who enroll in a college algebra course by successfully completing a developmental algebra prerequisite had a lower persistence rate and a lower success rate than students who enrolled in the course by scoring above a computerized placement test cutoff score. However, completing developmental algebra was weakly associated with being unsuccessful and withdrawing from college algebra.

Alg, D/R (PS)

Glickman, Cynthia Lynn. (2000). *The effects of computerized instruction in intermediate algebra.*(University Of Nevada, Las Vegas). DAI-A 61/05, p. 1773, Nov 2000. [9973965]

A reform oriented computer-assisted instructional environment (R-CAI) for community college students was examined. The R-CAI students maintained the same level of procedural skill, surpassed the traditional algebra students in conceptual understanding, increased in mathematical confidence, and decreased in mathematical anxiety.

CAI, Knw, Alg, Att, Anx (PS)

Gningue, Serigne Mbaye. (2000). *The use of manipulatives in middle school algebra: An application of Dienes' variability principles.*(Columbia University). DAI-A 60/12, p. 4356, Jun 2000. [9956352]

The purpose of this study was to determine the effects of the use of Dienes' variability principle using manipulatives on middle school students' ability to perform algebraic processes. Performance was described as satisfying, considering that, questions students solved in the study, were usually well beyond middle school expectations.

Manp, Lrng, Alg (MS)

Gordon Calvert, Lynn Melanie. (1999). *Mathematical conversations within the practice of mathematics.*(University Of Alberta (Canada)). DAI-A 60/08, p. 2842, Feb 2000. [NQ39532]

This researcher presents three domains of mathematical conversation which have the potential to influence pedagogy and mathematical practice. The domains are: adressivity towards the other, addressivity towards otherness, and the lived curriculum.

Comm, Oral, Lrng (ALL)

Goycochea, Bonnell Blue. (2000). *College prep mathematics in secondary schools: Access denied.*(The Claremont Graduate University). DAI-A 61/04, p. 1333, Oct 2000. [9967674]

The study examines factors that account for the successful completion of the college-track mathematics sequence by students (n=30) who are not expected to do so. Placement in eighth grade college-track mathematics was a strong predictor of completion, and eighth grade placement was due more to students' overall school skills than to their mathematics skills.

Assm, Eqty, Ach (HS)

Graham, Laura Hanchon. (2000). *Self-efficacy, motivation constructs, and mathematics performance of middle school students: A three-year longitudinal study.*(Emory University). DAI-A 61/05, p. 1741, Nov 2000. [9974753]

The researcher studied the influence of various mathematics self-beliefs on mathematics performance and whether motivation varies by gender or placement. Mathematics self-efficacy predicted performance. Strength of motivation decreased from grade 6 to grade 8. Self-efficacy did not differ by gender (n = 207).

Blf, Gend, Lrng, Aff, Ach (MS)

Gray, Noel Constantine. (2000). *Attitudes of urban high school mathematics teachers toward the mandate requiring algebra for high school graduation.*(Florida Atlantic University). DAI-A 61/01, p. 40, Jul 2000. [9957884]

The attitudes of White teachers (negative) and Latino teachers (positive) toward the mandate are rooted in social and political considerations. Black teachers are moderate in attitude toward the mandate and have never challenged for the power in the district (n=98).

TAtt, Soc, Ethn, Alg (T, HS)

Guillen Soler, Gregoria. (1997). *The van Hiele model applied to the geometry of solids: Observation of the learning process.*(Universitat De Valencia (Spain)). DAI-C 61/03, p. 642, Fall 2000.

The dissertation presents a sequence of activities organised as an application of the van Hiele

model. Conclusions are from the observation of the teaching/learning process with Teacher Training College students and 12- year-olds. Explanations are given regarding the assessment of the students' level of reasoning.

Geom, PS, Lrng, Assm (TE, MS)

Haarer, E. Shawn. (2000). *Student reflection and software recording tools.*(Cornell University). DAI-A 60/11, p. 3941, May 2000. [9950690]

The goal of this study was to determine whether students (2 classes) in precalculus could be encouraged to reflect on their mathematics through the use of software tools and supporting curriculum. In capturing students' problem-solving processes the Recorder was found to be an effective tool for formative assessment.

Comp, Mtcg, Assm, Calc (PS)

Hald, Mark Edwin. (2000). *A PASS cognitive processes intervention study in mathematics.*(University Of Northern Colorado). DAI-A 61/06, p. 2183, Dec 2000. [9973911]

This study examined what effect Planning, Attention, Simultaneous, Successive (PASS) facilitation and additional mathematics error instruction, would have on two small groups (n = 10; n=9) of students known to be low in mathematical achievement,. Teaching control and regulation of cognitive activity had beneficial effects for most students.

Plan, D/R, Assm, Mtcg (EL)

Hall, Matthew Allen. (2000). *Bridging the gap between everyday practices and classroom mathematics: An investigation of two teachers' intentional use of semiotic chains.*(The Florida State University). DAI-A 61/05, p. 1773, Nov 2000. [9971753]

With situated cognition as the theoretical framework, the results of this case study indicate that semiotic chaining is a viable model for bridging the gap between everyday practices and school mathematics. In a curriculum driven by explicit standards, a mathematical topic should be chosen before the everyday activity and developing the chain.

Lrng, Tchg, Rep (ALL)

Hamtini, Thair M. (2000). *A comparison study of computer-facilitated instruction versus non-computer facilitated instruction in developmental mathematics at a university: Students' attitudes and achievement.*(University Of New Orleans). DAI-A 61/04, p. 1368, Oct 2000. [9970119]

Computer facilitated instruction was compared to traditional instruction in a college algebra course. Traditional and computer-facilitated groups realized improvements in achievement, with the traditional group improving more. The attitudes of the computer-facilitated group became significantly more positive. However, from a research standpoint, implementation of the computer facilitated instruction was flawed.

CAI, Alg, Att, Ach (PS)

Harder, Jayne Ann. (1999). *The effect of private versus public evaluation on stereotype threat for women in mathematics.*(The University Of Texas At Austin). DAI-A 60/09, p. 3270, Mar 2000. [9947247]

Women taking a mathematics test under public and stereotype threat conditions reported greater anxiety during the test that women taking the test under private and stereotype irrelevant conditions. Anxiety may result more from threats to social-image than to private self-image.

Gend, Anx, Eqty, Assm (ALL)

Harnish, Laura Karen. (2000). *A comparison of pre-service and in-service teachers' knowledge and beliefs of mathematics standards.*(Northern Arizona University). DAI-A 61/03, p. 864, Sep 2000. [9964022]

No difference was found between preservice (n=90) and inservice (n=128) teachers in their knowledge of the Standards. Pre-service teachers have views on teaching more in agreement with the Standards. Professional development workshops and classes are mentioned as sources of knowledge, but alternative sources are suggested by the participants.

Insv, Prsv, TKnw, Tchg, TBlf (T, TE)

Hart, Rose Kleski. (1999). *Attitudes and achievement within a cooperative learning context in a large-section mathematics course for future business majors.*(The Ohio State University). DAI-A 60/11, p. 3941, May 2000. [9951663]

This study investigated the training of instructors in the cooperative learning method, instructors' attitudes toward the method after using it, students' (n=900) attitudes toward the method, and student performance in business calculus. The study group students did no worse in the subsequent course than the control group.

Grpg, Calc, Att, Insv, TAtt (PS)

Haug, Carolyn Ann. (1999). *Local understanding, resources, and policies: Obstacles to standards-based mathematics education reform.*(University Of Colorado At Boulder). DAI-A 60/07, p. 2303, Jan 2000. [9938818]

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A study of four school districts showed implementation of reform was uneven across and within districts. Teachers and principals evidenced poor or partial interpretations of the reform effort while administrators had better understandings. Successful reform will include professional development, assistance to alleviate pressing problems, and agreement between district assessment and reform policies.

Curr, Impl, Assm, Insv (K-12)

Haverty, Lisa Ann. (1999). *The importance of basic number knowledge to advanced mathematical problem-solving.*(Carnegie-Mellon University). DAI-B 60/07, p. 3587, Jan 2000. [9936887]

The researcher tests the hypothesis that increased numerical knowledge improves mathematical inductive reasoning performance in two studies performed with seventh grade students. The results from both studies reveal a statistically significant interaction between numerical knowledge training group and performance on posttest inductive reasoning problems.

PS, Arth, Knw (MS)

Hayakawa, Hajime. (2000). *International usability, design guidelines and effectiveness of a World Wide Web-based instructional program for high school students in a cross-culture learning environment.*(Nova Southeastern University). DAI-B 61/05, p. 2619, Nov 2000. [9975205]

The researcher developed and evaluated three types of mathematics courseware on the WWW: an English-only version, a Japanese-only version, and a bilingual version. Both the bilingual and English- only courseware enabled Japanese students to learn both quadratic equations and mathematical terms in English.

CC, Tech, Alg, Comp (ALL)

Haynes, Linda Campbell. (1999). *Gender differences in the use of a computer-based mathematics game: Strategies, motivation, and beliefs about mathematics and computers.*(University Of South Alabama). DAI-A 60/09, p. 3328, Mar 2000. [9946660]

Males were more likely to stereotype mathematics and computers as male domains. No gender difference existed regarding algebra performance. Both genders were motivated to challenge themselves and be successful in a computer game. Males and females differed with regards to computer game strategy and with what motivated them to be successful in the game.

Gend, Comp, Att, Blf, Alg (HS)

Hebert, David Jay. (1999). *Technology as a tool for integrating high school algebra and geometry.*(The University Of Southern Mississippi). DAI-A 61/02, p. 538, Aug 2000. [9960884]

The locus of the orthocenter of triangles is used as an activity to connect geometry and algebra through functions. Students beliefs on the connection between algebra and geometry before and after the activity are compared.

Patt, Alg, Geom, Blf (HS)

Heckemeyer, Phyllis Gale. (2000). *Impact of peer techno-mentoring on junior high student mentors' attitudes toward mathematics and technology.*(Baylor University). DAI-A 61/06, p. 2165, Dec 2000. [9976814]

This study investigates the impact of peer techno-mentoring on junior high student mentors' attitudes toward mathematics and technology. Students (n=64) were split into an experimental group that worked collaboratively using technology to peer mentor and a control group. Study findings showed that the use of technology improved attitudes toward mathematics.

Att, Tech (MS)

Henthorne, Lisa Kay. (2000). *Mathematics learning environment differences between resilient and non-resilient middle grade students.*(University Of Houston). DAI-A 61/03, p. 922, Sep 2000. [9965194]

Students (n=108) identified as resilient or non-resilient by their teachers showed differences in being on task and in their perceptions of their role within the classroom, their focus on the goals in class, how often they use investigation, and of their treatment in class.

Att, Lrnr, Clln (MS)

Herring, Perian Meharg. (2000). *Teacher beliefs concerning the use of graphing calculators in the teaching of logarithmic functions in a community college college algebra course: Two case studies.*(The Florida State University). DAI-A 61/05, p. 1773, Nov 2000. [9971755]

Results indicate that what a teacher believes about mathematics, the teaching and learning of mathematics, and the use of graphing calculators has an effect on their instructional behavior. By making teachers conscious of their own beliefs, they are being forced to be reflective about their teaching and can lead to change.

GCal, TBlf, Alg (T, PS)

Hervey, Regina Lynn. (2000). *Equity in mathematics: Algebra for everyone.*(The College Of William And Mary). DAI-A 61/06, p. 2224, Dec 2000. [9974944]

The purpose of the study was to determine teachers' perceptions in implementing the ninth grade Algebra I program. The NCTM recommendations were not implemented in the required Algebra I program required by the state, and teachers were unaware the program was designed to meet the needs of a changing population. Conclusions support the need for comprehensive and ongoing training.

TBlf, Curr, Alg, TKnw (HS)

Higginbotham, Joyce Beverley. (1999). *The impact of the use of the Curriculum and Evaluation Standards for School Mathematics: Addenda Series Grades 5--8.*(The American University). DAI-A 60/09, p. 3297, Mar 2000. [9946640]

Students who learned mathematics using standards based activities scored higher on the year-end final examination and chose better problem solving strategies than students in a control group.

Curr, Ach, PS, (MS)

Holschen, Carl C. (1999). *The impact of the block schedule on high school mathematics instruction.*(Saint Louis University). DAI-A 60/08, p. 2782, Feb 2000. [9942781]

This research describes the experiences, thoughts, and perceptions of students and teachers in two high schools that made the switch to block scheduling. This research focused on how the block schedule changed teaching methods, content coverage, and teacher attitudes toward teaching mathematics.

Curr, Tchg, Lrng, , TAtt (HS)

Hsieh, Ju-Shan. (1999). *Children's understanding of the uses of parentheses.*(University Of Illinois At Urbana-Champaign). DAI-A 60/09, p. 3297, Mar 2000. [9944885]

This research confirms the model that children learn the use of parentheses in mathematics (associative and distributive properties, change of sign rule, and order of operations) in 5 phases: (1) order-of-operations, (2) "do what is inside the parentheses first," (3) incomplete understanding, (4) interconnected understanding, (5) complete understanding.

Arth, Alg, Lrng (EL)

Huerta Palau, Manuel Pedro. (1997). *The van Hiele levels related to SOLO taxonomy and concept maps.*(Universitat De Valencia (Spain)). DAI-C 61/03, p. 642, Fall 2000.

This research is divided into two parts. It consists of the study of the relationships between two frameworks: levels of reasoning and SOLO levels and the study of the relationships between levels of reasoning and students' concept maps. Results showed there are relationships among the three frameworks considered.

Lrng , Assm (ALL)

Hufferd-Ackles, Kimberly. (1999). *Learning by all in a math-talk learning community.*(Northwestern University). DAI-A 60/12, p. 4303, Jun 2000. [9953299]

A year-long case study of one teacher at a small urban elementary school establishing a math-talk learning environment. A math-talk learning community can be established in typical classroom settings with teachers who possess only basic functional competencies in mathematics if they are supported by a research-based curriculum.

Curr, Oral, Comm, Tchg (EL)

Hutson, Terry Lynn. (1999). *An assessment of a mathematics program including the scheme for placing students into developmental courses.*(The University Of Memphis). DAI-A 60/11, p. 3886, May 2000. [9949968]

This study examined the relationship of placement test scores and certain academic and demographic variables to final course grades and the effectiveness of the developmental mathematics courses. The findings were generally not significant for academic and demographic variables. Developmental courses significantly improved performance in future courses.

Assm, D/R, Alg, Curr, Soc (PS)

Isaacson, Jeffrey Darrell. (1999). *The effects of static graphic, animated graphic, and interactive animated graphic presentations on acquisition of the tangent concept.*(University Of Florida). DAI-A 60/09, p. 3297, Mar 2000. [9945987]

No correlation was found between spatial visualization ability acquiring the mental image of the rotating secant. Males outperformed females in concept acquisition and image acquisition. The interactive-animated group outperformed the static group on the test for the tangent concept.

Calc, Gend, Vis, MMed, Comp (PS)

Ittigson, Robin Joyce. (2000). *An analysis of questions and questioning patterns for the development of algebraic thinking in middle and secondary school mathematics classrooms.*(Duquesne University). DAI-A 61/06, p. 2224, Dec 2000. [9976889]

This study was conducted to detect teacher-questioning patterns to build algebraic thinking. Nine teachers in the Linked Learning Mathematics Project participated. When the questioning pattern for similar tasks was compared, a back and forth pattern between lower and higher cognitive levels emerged. The category of conceptual questioning was utilized most frequently.

Tchg, Alg, PS, Lrng (SE)

Jacobson, Katrine Gram. (1999). *Central tensions: A critical framework for examining high school mathematics and mathematics education.*(The Claremont Graduate University And San Diego State University). DAI-A 60/07, p. 2416, Jan 2000. [9939238]

This study concludes that traditional mathematics education approaches support hegemony and maintenance of the status quo. The more mathematics taken, the more students resist the subject and the less useful it appears. Teacher expectations have a strong effect on student confidence, a key factor in success. Tracking limits opportunity, and teachers should consider the societal context of mathematics education.

TAtt, Att, Eqty, Soc (SE)

Jakabcsin, Mary S. (2000). *Attitudes of secondary school mathematics teachers about the NCTM Standards and the reform movement: Implications for staff development.*(University Of Pittsburgh). DAI-A 61/06, p. 2224, Dec 2000. [9974438]

A disparity of viewpoints about the NCTM Standards led to this research study. Secondary school mathematics teachers (n=196) were generally favorable to the Standards. Also, teachers indicated that staff development was needed to increase receptivity and to yield successful implementation.

TAtt, Curr, Insv (T, SE)

Jeon, Kyungsoon. (1999). *Teacher in transition: A mathematics teacher's understanding of teaching with the graphing calculator.*(University Of Georgia). DAI-A 60/11, p. 3942, May 2000. [9949507]

A secondary mathematics teacher's understanding of teaching was studied with respect to the changes in her teaching and what happened in her classes when the graphing calculator was used as an everyday instructional tool. This study documented how the graphing calculator is changing the content and pedagogy of secondary mathematics.

Curr, GCal, Tchg, TAtt (T, HS)

Johnson, Dianne Hood. (1999). *The effects of inclusion placement on math and reading scores of regular education students.*(The University Of Mississippi). DAI-A 60/08, p. 2783, Feb 2000. [9942357]

Thirty students participated in this research, and the results showed that there were no significant differences between the math and reading test scores on the Iowa Test of Basic Skills for inclusion regular education students and non-inclusion regular education students.

Ach, Clln, LD, Eqty (EL)

Johnson, Rita Merklin. (1999). *Gender differences in mathematics performance: Walberg's Educational Productivity Model and the NELS:88 database.*(University Of The Pacific). DAI-A 60/11, p. 3942, May 2000. [9952615]

This study used secondary analysis of two previous studies to determine whether gender differences in mathematics achievement testing outcomes, coursework, and attitude could be explained. Findings indicate that there are significant gender differences, favoring males, in overall mathematics achievement, top quartile mathematics achievement, and attitude toward mathematics, but no significant differences in mathematics coursework.

Gend, Ach, Att,, Impl (K-12)

Jones, Jeanette Louise. (2000). *Linear equation solving by high school students with mild disabilities.*(Ball State University). DAI-A 61/02, p. 565, Aug 2000. [9963087]

Two participants were taught with different methods alternating the use and non-use of manipulatives. Both learned to solve linear equations. Manipulative materials use had more effect on the female participant.

LD, Alg, Manp (HS)

Jones, Kenneth W. (1999). *Performance-based classrooms: A case study of two elementary teachers of mathematics and science.*(University Of Louisville). DAI-A 60/07, p. 2352, Jan 2000. [9939914]

This case study develops a framework to describe five characteristics that contribute

to performance-based classrooms. The five characteristics are: caring community, connectionist learning theory, thinking and doing curriculum, diverse learning opportunities, and ongoing assessment.

Curr, Lrng, Clln, Assm, Soc (EL)

Kahan, Jeremy Arthur. (1999). *Relationships among mathematical proof, high school students, and a reform curriculum.*(University Of Maryland College Park). DAI-A 60/08, p. 2843, Feb 2000. [9942965]

No significant differences were found between students taking the Core Plus Mathematics Program and a more traditional class with regard to overall competence with proof, and perceiving the need for mathematical proof (n=315). Calculus-intending students had a higher mastery of proof rate than middle track students. Results also showed proof is difficult for students and misconceptions were revealed.

Prf, Curr, Mscn (HS)

Kawanaka, Takako. (2000). *Comparative case studies of mathematics instruction and learning in three high-achieving European countries (Czech Republic, Switzerland, Netherlands).*(University Of California, Los Angeles). DAI-A 61/01, p. 82, Jul 2000. [9957823]

Results from this study showed that mathematics is taught similarly within each country but differently across the three countries. The common traits in the three high achieving countries also apply to Japan but not to German or US instruction.

Tchg, CC, Ach, Soc, Ethn (MS)

Kazemi, Elham. (1999). *Teacher learning within communities of practice: Using students' mathematical thinking to guide teacher inquiry.*(University Of California, Los Angeles). DAI-A 60/10, p. 3633, Apr 2000. [9947020]

The goal of the study was to help teachers develop their understandings of students' mathematical thinking through their professional inquiry. Teachers in one school met in monthly workgroups throughout the year. Discussions centered on students' mathematical thinking strategies, extending and building students' mathematical understandings, classroom practices, and teachers' roles in classrooms.

Insv, Knw, Tchg, Comm, Lrnr (T, EL)

Kermani, Sasan A. (2000). *Extended trigonometric hyperbolic functions and control theory.*(Florida Institute Of Technology). DAI-A 61/05, p. 1773, Nov 2000. [9976185]

In addition to geometrical methods, there is another way of studying the properties of trigonometric and hyperbolic functions, namely, via differential equations. One does not need to solve the differential equation but employ the analytical methods to study the properties. The immediate generalization is in the field of the extended matrix functions.

Calc, Tchg (PS)

Kindel, Dawn E. (2000). *The development of a study skills component to accompany the Foundations of Mathematics course with pilot-testing and plans for implementation and evaluation.*(Nova Southeastern University). DAI-A 61/05, p. 1773, Nov 2000. [9975086]

Based on a project that pilot-tested the infusion of a study skills, the following conclusions were identified: study skills can improve student performance; not all student groups are affected equally; and students prefer shorter, less structured study skills.

Styl, Att (PS)

Kloster, Thomas Edward. (1999). *An assessment of the comprehension of the Cartesian plane in college students.*(University Of Northern Colorado). DAI-A 60/07, p. 2416, Jan 2000. [9939764]

This study (n=397) found that the Target-wise model of student comprehension of Cartesian translation tasks was more plausible than the Reverse-Operational and Inductive Cycle models.

Alg, Lrng, Rep (PS)

Knuth, Eric John. (1999). *The nature of secondary school mathematics teachers' conceptions of proof.*(University Of Colorado At Boulder). DAI-A 60/07, p. 2416, Jan 2000. [9938829]

Interviews and written responses of secondary mathematics teachers (n=18) show that it will be difficult for teachers to successfully enact reform recommendations given their current conceptions of proof. Teachers viewed proof as appropriate primarily for upper level mathematics, and proof was not viewed as a means for promoting mathematical understanding.

Prf, TKnw, TBlf, Curr (SE, T)

Koehler, Matthew John. (1999). *Designing case-based hypermedia tools to help teachers understand children's mathematical development.*(The University Of Wisconsin - Madison). DAI-A 61/02, p. 495, Aug 2000. [9956264]

Hypermedia cases as illustrations of central ideas or as both narratives and illustrations were developed into tools for pre-service teachers. Results indicate that narrative cases afforded greater opportunity to organize knowledge and analyze students' work.

Prsv, MMed, D/R (TE, EL)

Kong, Qiping. (2000). *Student's engagement in the process of mathematics learning and its effects on learning outcome.*(Chinese University Of Hong Kong). DAI-A 61/03, p. 866, Sep 2000. [9964836]

Students' (n=546) engagement (behavioral, cognitive, affective) in grade 5 was analyzed in relation to performance. Cognitive and affective engagement were significantly correlated and both associated with performance in open-ended problem-solving.

Ethn, Att, Clln, PS (MS)

Kovarik, Tomas. (1999). *Comparing the effects of traditional and reformed instructional methods on math anxiety and learning at a community college.*(Rutgers The State University Of New Jersey - New Brunswick). DAI-A 60/11, p. 3903, May 2000. [9949894]

The focus of this study was a comparison of traditional and reformed teaching and their effects on student learning and anxiety in four sections of precalculus. It was found that the reformed method resulted in significantly greater decrease in anxiety scores and no difference in final exam scores (n=69).

Curr, Anx, Calc (PS)

Krakowski, Rebecca Jo. (2000). *The effect of graphics calculator use on precalculus students' understanding of polynomial, rational, and exponential functions.*(North Carolina State University). DAI-A 61/03, p. 922, Sep 2000. [9964325]

One control group (n=32) and two experimental groups (n=39; n=42) indicate that graphing calculators alone do not have a lasting positive effect. Students from the group that had the calculators throughout the semester had a clearer understanding about polynomial, rational and exponential functions.

GCal, Calc, Curr (PS)

Krows, Arminta Jean. (1999). *Preservice teachers' belief systems and attitudes toward mathematics in the context of a progressive elementary teacher preparation program.*(The University Of Oklahoma). DAI-A 60/08, p. 2843, Feb 2000. [9940295]

Students (n=226) who had completed elementary education coursework had significantly higher self-efficacy with respect to their ability to teach mathematics. These students also support constructivist approaches to teaching mathematics, and hold a view on the nature of mathematics as a dynamic, ever changing, problem-driven branch of science.

Prsv, Blf, Att, Lrng, Curr (TE, EL)

Kupari, Pekka Antero. (1999). *From practising computational skills to problem-solving: Mathematics teachers' mathematical beliefs and the construction of their teaching.*(Tampereen Yliopisto (Finland)). DAI-C 61/02, p. 361, Summer 2000.

The study examines the beliefs that Finnish teachers hold about teaching and learning mathematics. In the first phase, the subjects were teachers of Grades 4 and 6 (N = 108) and Grade 9 (N = 65). The second stage of the study in covered Grade 9 teachers (N = 68) and thematic interviews with four. Questionnaire data were analysed using statistical procedures.

TBlf, Ethn (SE)

Kysh, Judith Mary. (1999). *Discourse in small groups in an Algebra 1 class.*(University Of California, Davis). DAI-A 60/10, p. 3622, Apr 2000. [9948708]

This study examines students' talk, recorded as they were working in small groups in one high school algebra classroom. Evidence from this analysis clearly supports the use of small groups as a means for providing opportunities for students to discuss mathematics in high school classrooms.

Clln, Oral, Alg, Grpg (HS)

Lacefield, William Otis, III. (1999). *A study of elementary teachers' attitudes toward mathematics instruction and mathematics teaching methods used in the elementary classroom.*(Georgia Southern University). DAI-A 61/06, p. 2225, Dec 2000. [9978584]

This study involved an investigation of (n = 90) elementary teachers' attitudes toward mathematics instruction and the teaching methods they implemented. The inconsistent results of this study suggest that if there are relationships between teachers' attitudes and the frequencies with which they implement particular teaching methods, the relationships are weak.

Tatt, Tchg (T, EL)

Lawler, Gary M. (2000). *The use of written scaffolds to instruct linear functions in a reformed algebra course*

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using graphing calculators.(State University Of New York At Albany). DAI-A 61/06, p. 2168, Dec 2000. [9974992]

The study considered whether written scaffolds (both conceptual and procedural) within a cognitive apprenticeship framework increase student achievement (n = 46) in linear functions studied in a reform college algebra course. The data suggested that the use of scaffolding was an effective method, yet did not increase achievement.

Lrng, Tchg, GCal, Alg,, Ach (PS)

Lee, Hea-Jin. (1999). *The nature of the changes in reflective thinking in preservice mathematics teachers engaged in student teaching field experience in Korea*.(The Ohio State University). DAI-A 60/11, p. 3942, May 2000. [9951685]

Student teachers' (n=5) reflective thinking was investigated from two perspectives: the content of reflective thinking and the depth of reflective thinking. Student teachers' concerns changed over time, from discipline issues to instructional skills, and finally to lesson preparation. Background such as beliefs and attitudes, knowledge of content and pedagogy and teaching experiences; and the field experience context were related to change.

Prsv, Mteg TAtt, Tknw (TE)

Lee, Hsiu-fei. (1999). *Why they fall behind in math: A study of underlying cognitive factors of second-grade high-math achievers and low-math achievers in Taiwan*.(Northwestern University). DAI-A 60/12, p. 4356, Jun 2000. [9953319]

The study examines Chinese second-grade high-mathematics achievers (HMAs) and low-mathematics achievers (LMAs) who are at risk of developing mathematical learning disabilities (MLD). The results show that, when compared to HMAs, LMAs showed a wide range of weakness in the areas of short-term memory, working memory and long-term memory.

Lrng, LD, Ach (EC)

Lee, Maryke L. (2000). *A study of academic characteristics of successful and unsuccessful comunity college statistics students*.(University Of Central Florida). DAI-A 61/02, p. 538, Aug 2000. [9962904]

Statistics attitude scale ranking positively affect students' grades (n=331). The CPT-scores on college level mathematics, algebra, arithmetic, reading and the score for Math Anxiety all were positively related to students' grades. It is recommended that students be given information about their attitude on the scale and teachers try to enhance student attitudes.

Stat, Lrnr, Att, Tchg (PS)

Lee, Wan-I. (1999). *The relationship between students' proof writing ability and Van Hiele levels of geometric thought in a college geometry course*.(University Of Northern Colorado). DAI-A 60/07, p. 2417, Jan 2000. [9939765]

No significant difference exists between Van Hiele Level (VHL) scores before and after taking a Modern Geometry class (n=12). Qualitative analysis showed that some VHL 1 students can identify hypotheses and draw their own conclusions. Also, the Modern Geometry class did improve reasoning and proof writing skills.

Prf, Geom, PS (PS)

Lenz, Claire Ruth. (1999). *The effects of family influence on motivation and achievement of low-socio-economic Latino and African- American elementary school students*.(St. John's University (New York)). DAI-A 60/08, p. 2805, Feb 2000. [9942106]

This study showed students' (n=210) reading achievement predicted mathematics success, parental involvement improved reading and mathematics achievement and student self-concept, a high level of mothers' support for males contributed to increased tardiness, and low levels of parental pressure was linked to increased achievement and decreased rates of absence and tardiness.

Ethn, Soc, Ach, Att, Blf (EL)

Li, Yeping. (1999). *An analysis of algebra content, content organization and presentation, and to-be-solved problems in eighth-grade mathematics textbooks from Hong Kong, Mainland China, Singapore, and the United States*.(University Of Pittsburgh). DAI-A 61/01, p. 119, Jul 2000. [9957757]

U.S. textbooks vary in their emphasis on algebra. They are similar in presenting small units, real-world contexts, students' practice and variety of problems. Asian textbooks are similar in their emphasis on pure mathematics content and high mathematics requirement in algebra and procedural skills.

CC, Matl, Alg, Curr, PS (MS)

Liberant, Janna. (2000). *A comparison of group and whole class instruction in a community college remedial*

arithmetic course.(Columbia University Teachers College). DAI-A 61/06, p. 2225, Dec 2000. [9976737]

The purpose of this study was to examine two techniques in teaching word problems involving multiplication and division in a community college remedial arithmetic class. The study sought to determine if (n=30) students' performance is improved by working in pairs on the word problems.

M/D, PS, Grpg, Arith, D/R (PS)

Lingefjard, Henry Thomas. (2000). *Mathematical modeling by prospective teachers using technology.*(University of Georgia). DAI-A 61/06, p. 2225, Dec 2000.

Three studies were conducted at the University of Gothenburg to investigate prospective mathematics teachers' understanding of mathematical modeling when using technology to solve a variety of problems. All three studies confirmed the essential role played by the validation part of mathematical modeling when technology is present.

Tech, Rep, TKnw, PS, Prsv (TE)

Liptak, Lynn Ann. (1999). *Teachers as researchers into constructivist mathematics learning: Impact on beliefs, practice, and professional interaction in an urban school.*(Columbia University Teachers College). DAI-A 61/02, p. 443, Aug 2000. [9959346]

Participation in professional development processes changed teachers' beliefs and practices in a constructivist direction. Having a forum to reflect collectively was key in reducing isolation, developing diverse perspectives, and changing existing theories and beliefs. To teach in more powerful ways, teachers must learn in more powerful ways than traditional staff development.

Insv, TKnw, TBlf, Mtcg, Comm, Lrng (T, All)

Logan, Patricia. (2000). *An investigation of the causal mechanism responsible for the effectiveness of an interspersal procedure.*(Mississippi State University). DAI-A 61/04, p. 1292, Oct 2000. [9970377]

The current study sought to extend current research on matching law and choice behaviors by measuring the effectiveness of interspersing brief mathematics problems into an assignment containing longer multiplication problems. Significantly more students chose the experimental assignment sheet as their preferred homework assignment and as the easier assignment.

M/D, Curr (MS)

Lucas, Carol Ann. (1999). *A study of the effects of cooperative learning on the academic achievement and self-efficacy of college algebra students.*(University Of Kansas). DAI-A 61/02, p. 538, Aug 2000. [9961058]

Scores on the Perceived Ability Subscale showed no difference between cooperative (n=307) and traditional (n=427) learning. Grades were significantly higher in cooperative learning classes. The effects of using cooperative learning did not differ when gender was considered.

Grpg, Att, Gend, Alg (PS)

Lucas, Marva Sullivan. (1999). *Entry level into developmental studies: Does it affect student retention?*(Tennessee State University). DAI-A 60/08, p. 2843, Feb 2000. [9943848]

Nondevelopmental mathematics students were retained at a significantly higher rate than developmental mathematics students. There were also significantly different retention rates for students in the following mathematics groups: Nondevelopmental, Basic Mathematics, Elementary Algebra, and Intermediate Algebra.

D/R, Soc (PS)

Ma, Yunpeng. (1999). *A case study of the implemented mathematics curriculum in urban and rural primary schools in China* (Chinese University Of Hong Kong (People's Republic Of China)). DAI-A 60/09, p. 3259, Mar 2000. [9945656]

Teachers in China strongly followed national content standards, but urban teachers assigned more challenging homework problems. Urban teachers used more variety in their methods and classroom activities. Teacher knowledge, teacher belief, and school culture most strongly influenced teachers' curriculum decision making. More professional exchanges existed in the urban setting.

Curr, TBlf, TAtt, Soc (EL)

Madaus, Melissa Mary Root. (2000). *Effectiveness of the Mystery Motivator intervention in improving math homework completion and accuracy percentages* (The University Of Connecticut). DAI-A 61/02, p. 496, Aug 2000. [9963283]

Results of this study show that the Mystery Motivator intervention was effective across both classrooms for 4 out of the 5 fifth grade students. Students and the teachers rated the intervention positively.

D/R, Att, Matl , Aff (MS)

Makanong, Aumporn. (2000). *The effects of constructivist approaches on ninth grade algebra achievement in Thailand secondary school students.*(University Of Minnesota). DAI-A 61/03, p. 923, Sep 2000. [9966248]

The study of 164 ninth graders showed no significant differences of problem solving processes and achievement between constructivist approaches and traditional teaching. Qualitatively, constructivist teaching got the students much more involved in learning mathematics and they tried harder.

Lrng, Alg, PS, Ethn (HS)

Mandell, Susan. (1999). *Effects of secondary students' creation of hypermedia units on mathematical achievement and attitudes toward mathematics and computers.*(Purdue University). DAI-A 60/11, p. 3943, May 2000. [9952141]

This study investigated the effects of students' (n=52) creation of hypermedia on their mathematical achievement and on their attitudes toward mathematics and technology. Students in experimental groups created hypermedia units to review mathematics concepts. The results of this study suggest that these activities may provide some learning benefits for students.

Comp, Tech, Att (HS)

Manswell Butty, JoAnne L. (1999). *One case for systemic reform: Differences among four combinations of traditional and reform instructional practices and mathematics performance of 10th and 12th grade African American and Hispanic students.*(Howard University). DAI-A 61/03, p. 882, Sep 2000. [9966745]

The study showed that different instructional practices in the tenth and twelfth grades did not significantly affect students' (n=364) performance. Pearson product-moment coefficients were significant suggesting that students with good attitudes towards mathematics in the tenth obtained better scores in the twelfth grade.

Curr, Ethn, Tchg, Lrnr (HS)

Matthee, Machdel Catharina. (1999). *Supporting the teaching of mathematics by information technology in a co-operative learning environment* (University Of Pretoria (South Africa)). DAI-A 60/11, p. 3943, May 2000.

This study was to develop a theoretical framework for computer supported co-operative mathematics learning (CSCML). The framework sheds more light on the dynamics of social constructivism and recognises the unpredictable nature of the learning environment.

Lrng, Tech, Grpg, CAI (ALL)

Matthews, Yvonne Amanda. (2000). *A comparison of a constructivist mathematics curriculum and an instructivist mathematics curriculum in relation to the NCTM Curriculum Standards and the Delaware state standards.*(Wilmington College (Delaware)). DAI-A 61/03, p. 923, Sep 2000. [9964870]

Data showed that the curricula met both state and national standards. Teachers supplement the curricula and use a variety of instructional strategies relative to the implementation of the curricula.

Curr, Tchg, Lrng (ALL)

McAdam, John F. (2000). *Examining prospective teachers' conceptual understandings of algorithms through activity-centered collaboration with Base Ten Blocks.*(Boston College). DAI-A 61/02, p. 503, Aug 2000. [9961612]

Prospective teachers' (n=27) images of mathematics instruction were influenced by their school experiences. Major findings are: constructing models of algorithms enhanced understanding, prior knowledge of algorithms involving decimal fractions did not initially support understanding of learning and teaching, the blocks and collaboration are tools to resolve cognitive issues during the teaching and learning of mathematics.

Prsv, TKnw, Manp, Rep, Frac, Decm, Lrng (TE, EL)

McCall, Cynthia Ann. (1999). *Math computation difficulties in grade 7 and 8 students.*(University Of Toronto). DAI-A 60/10, p. 3622, Apr 2000. [NQ41236]

This study investigated the cognitive abilities and basic mathematics skills that are believed to be related to success in mathematics computations. The results revealed that the control group (n=30) scored significantly higher than the mathematics disabilities group (n=30) while no differences were found on the working memory tasks, or verbal short-term memory.

Lrng, LD, Arth (MS)

McCarthy, Michael John. (1999). *The efficacy of a-box notation, an alternate notation for logarithm.*(The University Of Texas At Austin). DAI-A 60/09, p. 3297, Mar 2000. [9947314]

No significant differences exist on posttests between students learning logarithms using

a-box notation (an alternate notation for logarithm) and students using conventional logarithmic notation. Further, it was found that a-box notation may be a hindrance for students learning logarithms.

Calc, Lrng (PS)

McGatha, Maggie Back. (2000). *Instructional design in the context of classroom-based research: Documenting the learning of a research team as it engaged in a mathematics design experiment.*(Peabody College For Teachers Of Vanderbilt University). DAI-A 61/03, p. 923, Sep 2000. [9964905]

This dissertation clarified the instructional design decisions made by the team and how those decisions created opportunities for learning. It focused on critical issues that were tracked from the planning year throughout the classroom experiment.

Rsch, Plan, Insv (T, MS)

McKenzie, Sonia Yalonda. (1999). *Achievement and affective domains of Algebra I students in traditional or self-paced computer programs.*(The University Of Southern Mississippi). DAI-A 60/09, p. 3297, Mar 2000. [9947696]

Students in traditional algebra classrooms scored significantly higher on an achievement test than students in self-paced mastery learning classes. The self-paced class helped reduce anxiety levels of males.

Curr, Comp, Ach, Att, Anx, Gend (SE)

McNabb, Danny Ray. (2000). *Developing students' understanding of similar figures: A perceptual approach.*(The Louisiana State University And Agricultural And Mechanical Col.). DAI-A 61/03, p. 923, Sep 2000. [9963955]

The foundation of this approach was an analysis of similarity: "within" relationships and "between" relationships. Students were able to represent their perceptual orientations quantitatively. More students chose the "between" relationship even when the "within" relationship was more convenient, highlighting the difficulty of "static" representations and the accessibility of the dynamic one.

Geom, Patt, Vis, Rep (SE)

Miller, Jacqueline Beth. (2000). *The quest for the constructivist statistics classroom: Viewing practice through constructivist theory.*(The Ohio State University). DAI-A 61/05, p. 1774, Nov 2000. [9971608]

This research addressed the question of how educators support knowledge construction in their introductory statistics courses. All four accomplished statistics educators supported construction of knowledge and employed multiple strategies to involve the students in the learning process. Class size impacted the ability of the instructors to employ constructive strategies.

Lrng, Stat (PS)

Miller, Janet Lutz. (1999). *The mathematics preparation of elementary teachers* (University Of Kentucky). DAI-A 60/11, p. 3943, May 2000. [9948890]

This study examined the mathematics knowledge of preservice elementary teachers (n=28) within the context of a course consistent with mathematics reform. Implications of the study show instructors of the mathematics courses for preservice elementary teachers should use a conceptual approach accompanied by mathematics manipulatives, which model key ideas and procedures.

Prsv, TBlf, TKnw,, Tatt, Lrng (TE)

Miller, Mary Lou. (1999). *A study of the effects of reform teaching methodology and van Hiele level on conceptual learning in calculus.*(Oklahoma State University). DAI-A 61/03, p. 923, Sep 2000. [9963572]

The mean van Hiele (vH) level was lower for the treatment group than for the control group but the post-treatment scores were higher for the treatment group. No relationship was found between the combination of vH level with methodology and conceptual performance. However students at the highest level scored higher on the conceptual portion of the post-treatment instrument.

Lrng, Calc, Tchg, Lrnr, Geom (PS)

Miller, Patricia Bederman. (1999). *The effects of anxiety reduction and study skills techniques on achievement and anxiety level of students enrolled in a Basic Algebra course at a small, private college.*(Marywood University). DAI-A 61/02, p. 497, Aug 2000. [9962091]

Significant reduction in anxiety and increase in achievement (n=94) for the treatment groups were reported. Further there was a significant difference in anxiety between one treatment and control group and significant difference in anxiety between the two treatment groups.

Anx, Alg, Gend (PS)

Mintz, Kim Stubblefield. (2000). *A comparison of computerized and traditional instruction in elementary mathematics.*(The University Of Alabama). DAI-A 61/03, p. 954, Sep 2000. [9966705]

Students received 10 to 12 minutes daily Computer Assisted Instruction using SuccessMaker Integrated Learning System software with instruction into mathematics concepts and skills. Critical thinking skills and mathematical achievement were compared between control (n=440) and treatment (n=622) groups and by gender and ability.

CAI, Arth, PS, Gend (EL)

Moore, Maureen Anne. (1999). *Effects of congruent versus incongruent instructional strategies on achievement and attitudes toward mathematics of second-grade urban elementary students.*(St. John's University). DAI-A 60/11, p. 3911, May 2000. [9953451]

This research was designed to examine the effects of matching and mismatching students' (n=1 school) perceptual preferences and concurrent versus dissonant instructional strategies on achievement and attitudes toward mathematics. The data revealed that there were no significant differences in achievement between matched and mismatched conditions for students with auditory or kinesthetic learning-style preferences.

Tchg, Lrng, Styl, Ach, Att (EC)

Morrow, John Edwin, Jr. (2000). *A comparison of the effectiveness of motion-based laboratories and computer-based simulations for teaching skills in graphing.*(University Of South Alabama). DAI-A 61/06, p. 2271, Dec 2000. [9975868]

The purpose of this study was to compare the effectiveness of two modes of instruction for teaching graphing skills to seventh grade students (n=120). Results indicated that students who received either the motion-based laboratory (MBL) treatment or the computer-based simulation (CBS) treatment outperformed the control group.

M/CBL, Comp, Tech (MS)

Moss, Joan. (2000). *Deepening children's understanding of rational numbers: A developmental model and two experimental studies.*(University Of Toronto (Canada)). DAI-A 61/06, p. 2225, Dec 2000. [NQ49900]

An experimental curriculum introduced rational number through the teaching of percent in linear measurement. Two formal teaching studies were conducted on grade 4, grade 6, and grade 8 students and pre-service teachers. Results showed that all of the students made large and statistically significant gains.

Frac, RaPc, Lrng, Meas, Prsv (T, EL)

Myers, Kenneth Russell. (1999). *Topics in discrete mathematical structures: Development and trial of a computer multimedia software.*(Columbia University Teachers College). DAI-A 60/07, p. 2417, Jan 2000. [9939529]

On a final exam, students scored higher on questions related to topics they learned using a multimedia software package than on questions related to topics learned in a lecture-based format. There was no significant difference between similar scores on the midterm exam. Using multimedia software positively affected student learning.

MMed, DscM, Oral, Grpg (PS)

Newbill, Gary C. (1999). *Relationships between the degree of restructuring in western Washington elementary schools and the results on criterion referenced 4th grade assessments for reading, mathematics, writing, and listening.*(Seattle Pacific University). DAI-A 60/10, p. 3608, Apr 2000. [9948329]

This study was to explore relationships between the degree of school restructuring in Western Washington elementary schools (n=47) and results on criterion referenced tests for reading writing mathematics, and listening. No statistically significant correlations were found between the degree of school restructuring and the demographic variables and between restructuring and results.

Curr, Assm, Soc (EL)

Nissen, Phillip Nachum. (2000). *Textbooks and the National Council of Teachers of Mathematics curriculum standards for geometry* (Georgia State University). DAI-A 61/06, p. 2226, Dec 2000. [9978930]

This research affirms that the NCTM Curriculum Standards and Addenda are the best representation of a common curriculum for mathematics, including geometry. Also, the research reveals that high school texts fail to meet, middle school texts comply, and primary school texts exceed the principal aims of the NCTM Standards in geometry.

Geom, Curr, Matl (K-12)

Novinger, Susan Kay. (1999). *Talking mathematics: Children's acquisition of mathematical discourse*

in a permeable curriculum.(University Of Missouri - Columbia). DAI-A 60/12, p. 4356, Jun 2000. [9953887]

The aim of this study was to explore how discursive practices that position children as active co-constructors of mathematical meaning might emerge in an inquiry-based mathematics classroom. Analyses indicated that the instructional context was gradually co-constructed through the children's and teacher's discursive practices.

Lrng, Tchg, Oral, Comm (EC)

O'Connor, Peggy A. (1998). *Construction of mathematical meaning in a 6th grade classroom: An analysis of modal auxiliaries in teacher interrogatives across the teaching of fractions and geometry.*(McGill University (Canada)). DAI-A 60/12, p. 4356, Jun 2000. [NQ44537]

This qualitative interpretive inquiry investigates how mathematical meaning is constructed in a sixth grade classroom with fractions and geometry. Results indicate that these learners' understandings were unique and that through the power of questioning that encourages multiple learner perspectives educators may obtain insights into children's mathematical meaning making in classroom contexts.

Oral, Comm, Lrng, Frac, Geom (MS)

O'Donnell, Barbara Dian. (1999). *A story problem: How to teach mathematics methods in an undergraduate teacher education program* (The University Of North Dakota). DAI-A 60/12, p. 4387, Jun 2000. [9956018]

Preservice teachers in two sections of a uniquely configured mathematics methods courses grappled with learning to plan, teach, and use instructional strategies. Through the act of peer teaching, preservice teachers evolve from students to teachers.

Prsv, Lrng, Grpg, Plan (TE)

Oberer, Joan J. Nicoletti. (2000). *The effect of instructional and learning-style congruence on mathematics achievement, attitudes, and behavior of underachieving, chronically misbehaving upper-elementary students in a suburban school district: An application of a brain-behavior model* (St. John's University, School Of Education And Human Services). DAI-A 61/02, p. 503, Aug 2000. [9962345]

The most poorly behaved students showed more misconduct when instructed with traditional methodology than with strategies responsive to learning style preferences. Attitudes of the students were overwhelmingly positive toward the learning-style responsive strategies. Retention was also higher with the responsive and congruent strategies.

Styl, Att, Soc (EL)

Ohana, Christina Pickerell. (1999). *A tangled web: Interactions and structures in university-school collaborations.*(Iowa State University). DAI-A 60/11, p. 3954, May 2000. [9950109]

This dissertation includes three research papers: A Comparison of Two Science Methods Courses, Preservice Cohorts and their Implications for Mathematics and Science Education, and a University-School Partnership. In order for the two institutions to work together, they must accommodate the interests, ideology, and information of the other.

Prsv, Curr (TE)

Olkun, Sinan. (1999). *Stimulating children's understanding of rectangular solids made of small cubes.*(Arizona State University). DAI-A 60/07, p. 2379, Jan 2000. [9940791]

Students used three distinct conceptualizations for building arrays of cubes depending on what they formed as a unit. After instruction, students used layering strategies during their building. Equal sharing situations aided in establishing units, composite units, and unit iteration.

Manp, Lrng, Oral, PlcV, Grpg (EL)

Ortiz, Kip Jerald. (2000). *A qualitative study of how homeschoolers learn mathematics, and their learning environments.*(The Florida State University). DAI-A 61/05, p. 1774, Nov 2000. [9971766]

This study provided an explanation for why child-led homeschooling environments are mathematically and academically stimulating and successful environments in many cases. Five theoretical formulations provided a rationale for why homeschoolers experience the success they do on standardized achievement tests.

Soc, Lrnr, Ach, Curr (K-12)

Owens, Mary Ellen Dickerson. (1999). *The relationships of cognitive learning styles, mathematics attitude, and achievement in a problem-posing classroom.*(The University Of Tennessee). DAI-A 60/09, p. 3298, Mar 2000. [9944279]

Three prealgebra classes (n=45) were taught traditionally and three classes (n=46) were taught using a combination of traditional and problem-posing activities. No difference was seen in achievement gain for concrete learners

between the two groups. Mathematics pre-attitudes showed no effect on achievement gain. No interactions were found between reflective observational and experimentation learners.

Ach, Styl, Att, Alg, PS (PS)

Painter, Corinne Agnes. (1999). *'Good thing I didn't say down boy! We all be gambling!' A study of social-moral and intellectual conflicts of young children as they play math games.*(Auburn University). DAI-A 60/07, p. 2364, Jan 2000. [9939639]

Conflict is important within the context of a classroom setting. As students worked through conflicts that arose while playing math games, significant intellectual and social-moral development occurred.

Soc, Lrng, Clln (EC)

Park, Mangoo. (1999). *Numerical development of Korean-English bilingual children: A constructivist teaching experiment.*(University Of Georgia). DAI-A 61/06, p. 2226, Dec 2000. [9975168]

The purpose of this study was to investigate and document how Korean-English bilingual children (n=7) developed their numerical concepts. The findings of the study showed that the bilingual children used a wider variety counting strategies and developed their counting schemes faster than previously studied monolingual children.

NSns, CC, Lrng (EC)

Petway, Renita Gammons. (2000). *An analysis and comparison of three eighth-grade mathematics assessments: Third International Mathematics and Science Study, National Assessment of Educational Progress, and North Carolina End-of-Grade Test.*(North Carolina State University). DAI-A 61/06, p. 2226, Dec 2000. [9974509]

Because each assessment has a different purpose, the uses and usefulness of the outcomes measured by each test vary widely. The North Carolina EOG best indicated an alignment between educators' planning, implementation, and student performance.

Assm, Curr (K-12)

Pinon, Denise Elaine. (2000). *Teaching and learning about high school algebra with two different representational formats.*(University Of California, Los Angeles). DAI-B 61/06, p. 3303, Dec 2000. [9976227]

One representation incorporated algebraic notation and the FOIL algorithm, and the other was based on geometry, incorporating diagrams of subdivided rectangles to illustrate that area was analogous to the product of two polynomial factors. Students worked through multiplication of polynomial problems better when they were presented using algebraic notation.

Alg, Manp, Rep, Tchg (SE)

Pitsch, Teri Lynn. (1999). *Teacher factors, teaching behaviors and gender in junior high school mathematics classrooms.*(University Of Idaho). DAI-A 60/12, p. 4357, Jun 2000. [9954106]

This qualitative study was to identify the teacher (n=8) factors and behaviors that lead to gender biased or unbiased classrooms in junior high school mathematics. Positive teacher attitude toward students was identified as the most frequently recorded teaching behavior that lead to mathematics classrooms that are free of gender bias.

Gend, Tchr, Tchg, TAtt (T, MS)

Powell, Angiline. (1999). *African Americans and their reflections on exemplary mathematics teachers.*(The University Of Alabama). DAI-A 60/11, p. 3944, May 2000. [9949394]

The researcher sought to understand six college students' perceptions of effective teaching practices for African American mathematics students. Exemplary teacher characteristics included: high quality explanations, teacher availability, the freedom to ask and answer questions and were caring toward the students.

Ethn, Tchr, Tchg, Att (PS, K-12)

Powers, Betty Louise. (2000). *The effect of parent or other adult involvement in mathematics homework on student achievement and attitude.*(Syracuse University). DAI-A 61/06, p. 2226, Dec 2000. [9977395]

This study investigated how parental involvement in mathematics homework affected the achievement and attitudes of their children (N = 66). Parent involvement was correlated with increased amounts of homework being returned, indirectly influencing higher achievement gains.

Soc, Ach, Att (EL)

Pratt, Ernest Oluwole. (2000). *Teacher Work Sample Methodology: A content analysis of the mathematics work samples produced by student teachers at Western Oregon University between 1991-1999.*(The University Of Tennessee). DAI-A 61/06, p. 2171, Dec 2000. [9973491]

This study analyzed the contents of 50 work samples. A majority of the student teacher work samples analyzed demonstrated weak or no alignment between stated instructional objectives and selected NCTM Curriculum and Evaluation Standards.

Tchg, Curr, Prsv (TE)

Priselac, Jody Ziccardi. (1999). *The role that teachers' beliefs about mathematics play in bringing about change in the elementary mathematics classroom: A professional development model.*(University Of California, Los Angeles). DAI-A 60/08, p. 2843, Feb 2000. [9943773]

This study investigates how teachers' beliefs about mathematics shape their teaching practices. Findings showed that professional development training that included understanding teachers' beliefs, analyzing student work, doing mathematics, and exploring alternative strategies gives teachers tools to change and improve their mathematics instruction (n=15).

TAtt, Insv, Curr, Tchg, TKnw (EL, T)

Pullano, Frank B. (2000). *Enhancing students' graph interpretation abilities through the use of graphing calculators.*(University Of Virginia). DAI-A 61/06, p. 2227, Dec 2000. [9975501]

Participants (n = 6) exhibited varying degrees of interpretation difficulties and their abilities improved by varying degrees. Participants more carefully attended to axes variables greatly reducing the number of instances of iconic translations. Participants exhibited more well developed understandings of the relationship between slope and the rate of change of one variable with respect to another following the intervention.

Mscn, Gcal, Alg (MS)

Pustejovsky, Susan Frances. (1999). *Beginning calculus students' understanding of the derivative: Three case studies.*(Marquette University). DAI-A 60/12, p. 4357, Jun 2000. [9953496]

This study analyzed the development of beginning calculus students' (n=12) understanding of the derivative in relation to their initial understandings of the three highly interconnected mathematical content strands of Variable, Function, and Rate (VFR). Results indicate a direct relationship between strong understanding of VFR and derivative.

Calc, Lrnr (PS, HS)

Rahim, Medhat Hishmat. (1981). *Piece-wise congruent regions, their area measure structure, and geometric thinking processes.*(University Of Alberta). DAI-A 60/12, p. 4357, Jun 2000. [9953840]

The researcher identified geometric thinking processes used by eighth grade students (n=58) in attempting to solve certain spatial problems. An instructional package consisting of a unit on spatial relationships among polygons utilizing piece-wise congruence concept with a teacher manual appeared most beneficial for the lower performing students.

Meas, Geom, Lrng (MS)

Reed, Michelle K. (2000). *A comparison of the place value understanding of Montessori and non-Montessori elementary school students.*(The Ohio State University). DAI-A 61/05, p. 1774, Nov 2000. [9971626]

Although the Montessori classrooms (n=47) in the study focused on conceptual development of place value ideas before students were taught procedural algorithms and rules, students in these classrooms were able to respond to procedural tasks just as well or slightly better than students in the non- Montessori classrooms (n=46).

PlcV, Curr, Lrng, Arth (EC)

Rho, Kwansik. (1999). *The multi-user object-oriented environment and changes of university students' conceptions of function relation.*(Arizona State University). DAI-A 60/07, p. 2354, Jan 2000. [9937637]

In working with function concepts, student (n=4) conceptual change did not follow a linear pattern and did not occur easily. The notion of sense-making and working with other students were identified as important factors in conceptual change. This study also showed promise for the use of virtual environments in learning mathematics.

Mscn, Grpg, CAI, Calc (PS)

Ribble, Margaret S. (1999). *Finding Fibonacci: An interdisciplinary liberal arts course based on mathematical patterns.*(The University Of Tennessee). DAI-A 61/02, p. 538, Aug 2000. [9962299]

Rationale for the course includes the benefit of connected learning and to offer a liberal arts course based on mathematics. Applications of Fibonacci numbers in art, literature, nature and economics are explored and students are asked

to assess the meaning of these connections. The overall goal of the course was achieved.

Patt, Aff, Soc, CC (PS)

Ridge, James Kirk. (1999). *Rater halo error and accuracy in a mathematics performance assessment.*(The University Of North Carolina At Chapel Hill). DAI-A 60/08, p. 2802, Feb 2000. [9943252]

Twenty raters who would score mathematics performance-based items were trained by an experienced scoring director and had opportunity to practice, and 20 raters were self-trained and had no opportunity to practice. All raters were given the same test items to score, and no differences were found regarding rater halo error.

Assm, Rsch (ALL)

Rizor, David M. (2000). *Wyoming teacher survey of instruction in elementary mathematics.*(University Of Wyoming). DAI-A 61/06, p. 2191, Dec 2000. [9973572]

The study was conducted to gather baseline data on instruction in grades two through four as Wyoming begins implementation of state standards and testing in mathematics. Significant relationships were found between Student achievement on the mathematics portion of the state mathematics assessment and survey responses on various items.

Assm, Curr, Tchg (EC)

Robichaux, Rebecca Lynn Rodrigue. (2000). *The spatial visualization of undergraduates majoring in particular fields of study and the relationship of this ability to individual background characteristics.*(Auburn University). DAI-A 61/01, p. 119, Jul 2000. [9958996]

Students (n=117) grouped by major either have no preference or preferred non-visual methods of problem solving. Mathematics majors scored lowest on levels of visualization. Childhood spatial experiences and father's occupation were related. Gender was positively related to spatial hobbies in favor of males.

Vis, Soc, Gend (PS)

Robinson, Katherine MacLeod. (1999). *Verbal report validity and children's subtraction.*(University Of Alberta). DAI-B 61/03, p. 1675, Sep 2000. [NQ46911]

Abstract: In this study, the validity of verbal reports in children's subtraction was investigated. Students in all grades (grades 1, 3, and 5) and in both report conditions were able to provide veridical reports of their solution strategies and the instruction to verbal report had little effect on their performance.

A/S, Oral, Lrng (EL)

Rodeheaver, Lounette Reeves. (2000). *A case study of communication between secondary mathematics student teachers and the cooperating teachers.*(Georgia State University). DAI-A 61/03, p. 924, Sep 2000. [9963690]

The study is to contribute to the conceptualization and understanding of effective feedback by the cooperating teacher to the student teacher and to highlight the kind of communication that takes place between the two. The findings indicate that communication does take place but is more subjective than objective. Feedback should be frequent, specific, continuous and relevant to the students' needs.

Prsv, Comm (TE, SE)

Rodriguez, Michael Clifford. (1999). *Linking classroom assessment practices to large-scale test performance.*(Michigan State University). DAI-A 60/10, p. 3638, Apr 2000. [9948164]

The U.S. portion of the Third International Math and Science Study database was used to evaluate a larger classroom assessment system, in mediating the relationships between assessment practices and achievement. Teachers' use of teacher-made objective tests, and their use of assessment information for grading and evaluation rather than feedback and discussion had significantly negative relationships to classroom performance.

Assm, Tchg, Blf (K-12)

Rosen, Lisa Stefanie. (2000). *Calculating concerns: The politics of representation in California's 'math wars'.*(University Of California, San Diego). DAI-A 61/06, p. 2365, Dec 2000. [9975031]

The debate that surrounds California's efforts to institute alternatives to traditional mathematics curriculum is the basis for this dissertation. Part One provides framework for the study. Part Two analyzes the rhetorical structure of arguments. Part Three emphasizes processes of local debate and contestation in two case studies.

Curr, Soc (K-12)

Rotigel, Jennifer V. (2000). *Exceptional mathematical talent: Comparing achievement in concepts and computation.*(Indiana University Of Pennsylvania). DAI-A 60/11, p. 3891, May 2000. [9952420]

This study examined the difference in achievement in mathematics concepts and computation for talented students (n=687). It provides evidence that talented students consistently perform better on measures of mathematics concepts than mathematics computation, indicating that students may be ready for a more challenging mathematics curriculum than their computational scores indicate.

Ach, Gift, Lrnr (EL)

Rowe, Elizabeth Marie. (2000). *The transition to algebra: The crossroads in math self-concept development.*(Cornell University). DAI-A 61/04, p. 1295, Oct 2000. [9967430]

This study examined whether a transition to algebra with a nontraditional algebra curriculum contributed to the overall decline and emerging gender differences in the mathematics self-concepts of 194 seventh grade students. These results provide no evidence that the transition has a negative association with declines or gender differences.

Alg, Gend, Att, Clln, Aff (MS)

Rowell, Denise Wilson. (2000). *Seventh grade students' conceptual understanding of multiplication of whole numbers.*(North Carolina State University). DAI-A 61/06, p. 2227, Dec 2000. [9974523]

This study examined seventh grade remedial mathematics students' conceptual understanding of multiplication. The findings indicate that even after several years of instruction about multiplication, these students are still weak in their conceptual understanding of multiplication and there are several factors that influence student understanding of multiplication of whole numbers.

M/D, D/R, Knw, Whol (MS)

Roy, Sharmila. (2000). *A qualitative study of number sense in students with disabilities based on their performance on subtraction tasks.*(State University Of New York At Buffalo). DAI-A 61/05, p. 1799, Nov 2000. [9967843]

The purpose of this study was to investigate the manifestations of number sense in students with disabilities during numerical tasks about subtraction. The results of the study indicate that students with disabilities are able to judge number magnitude, perform mental calculations, and use numbers flexibly.

NSns, LD, A/S (ALL)

Rudd, Stephen Wayne. (2000). *Music as an exemplar of mathematics: Implications for integrating math with music education.*(The Claremont Graduate University). DAI-A 61/04, p. 1217, Oct 2000. [9967687]

The researcher studied the relationship between music and mathematics education. The data suggest that regular music lessons affect mathematical ability. The musical materials of melody, harmony, and rhythm exemplify mathematics by the use of numbers, and letters, as variables for pitch and rhythm.

IC (K-12)

Runesson, Ulla Birgitta. (1999). *The pedagogy of variation: Different ways of handling a mathematical topic.*(Goteborgs Universitet (Sweden)). DAI-C 61/03, p. 637, Fall 2000.

The investigation describes the different ways teachers (n=5) handle the content when they teach fractions and percentages and to study teaching from a learning perspective. All five grade six and seven teachers demonstrate an orientation to the content as well as an ability to use variation, although in different ways.

Frac, RaPC (T, MS)

Russell, William Edwards. (2000). *The use of visual devices in probability problem-solving.*(Columbia University). DAI-A 61/04, p. 1333, Oct 2000. [9970267]

A large observational study (n=82) was followed by three studies; (n=74; 97; 138) manipulating various factors. Drawing of outcome trees and correctness of solution was marginally associated. The most helpful application of the outcome tree visual device was in solving conditional probability problems.

Prob, PS, Vis (ALL)

Ryan, Rosaleen Hong. (1999). *High school students' math course enrollment decisions.*(University Of California, Los Angeles). DAI-A 60/07, p. 2375, Jan 2000. [9939081]

Eccles' framework of academic choice was used to directly assess (n=109) students' reasons for their achievement-related decisions, especially regarding math course choice. Investigating students' future goals and the costs associated with choosing a particular class is crucial for a comprehensive understanding of course enrollment decisions.

Plan, Lrnr, Att, Blf (HS)

Saam, Julie Reinhardt. (1999). *A case study of a mathematics teacher's and science teacher's use of teacher wisdom in integrating middle school mathematics and science content.* (Indiana University). DAI-A 61/02, p. 554, Aug 2000. [9962729]

The study reveals teachers integrate "naturally" and "intentionally" when plans, integrated lessons, and units, are made. The findings provide an image of integration that shows connections between area content and life skills and guidelines. Interpretations provide a model that researchers can use to develop evaluation tools for teachers, teachers' characteristics and professional development programs.

IC, Plan , Insv (T, MS)

Sakamoto, Scott Isami. (1999). *The Cranmer abacus: Its use in teaching mathematics to students with visual impairments.* (The University Of Arizona). DAI-A 60/09, p. 3298, Mar 2000. [9946797]

This study synthesizes research done in the last three decades regarding the Cranmer abacus and visually impaired students. Also, the study finds that current teachers are successfully incorporating the abacus into the mathematics curriculum for visually impaired students, but that these teachers should take more mathematics.

LD, Manp, Tchg, Revw (ALL)

Sanders, June C. Rivers. (1999). *The impact of teacher effect on student math competency achievement.* (The University Of Tennessee). DAI-A 61/01, p. 147, Jul 2000. [9959317]

Although all children benefited from highly effective teachers, the lower 50% benefited most. A change in level of effectiveness of teacher sequence increased the probability of passing to at least 50/50 for at least one quartile of students for each assumed cut score.

Ach, Tchr, Insv (MS)

Sassano, Jennifer Beth. (1999). *The design and evaluation of mathematics history materials for pre-service elementary teachers.* (Columbia University Teachers College). DAI-A 60/07, p. 2453, Jan 2000. [9939549]

The researcher developed a mathematics history ancillary to compliment a course preparing pre-service elementary teachers to teach mathematics. The ancillary included Egyptian and Babylonian mathematics, and students stated that they found it helpful and would use it as a resource when teaching. Independent jurors deemed the ancillary useful.

Prsv, Curr, Mtl, (EL, TE)

Scott, Leslie Angela. (2000). *A matter of confidence? A new (old) perspective on sex differences in mathematics achievement.* (Loyola University Of Chicago). DAI-B 60/12, p. 6425, Jun 2000. [9955419]

The present study sought to answer the question: Why do high school females receive lower scores than males on problem solving and reasoning tests, despite receiving higher grades in math? The findings were suggestive of the notion that confidence mediates the effects of sex on performance on problem-solving tests.

Att, Gend, PS (HS)

Seaman, Carol Emyleen. (2000). *Students' use of spatial visualization with the aid of technology in the learning of three-dimensional calculus concepts.* (Central Michigan University). DAI-A 61/06, p. 2227, Dec 2000. [9976117]

This qualitative study describes how third-semester calculus students (n=4) used visualization and graphing calculators in forming multivariable calculus concepts during the fall semester 1999. From these findings, models of the interactions between visualization, concept image formation, and technology usage in multivariable calculus were developed.

Vis, Geal, Calc, Tech (PS)

Selzer, David Dorwin. (2000). *The effect of sequence of instruction on learning algebra concepts using enactive, iconic, and symbolic materials.* (University Of San Francisco). DAI-A 61/04, p. 1333, Oct 2000. [9970531]

This study sought to verify Jerome Bruner's theory that students (n = 38) learn faster when numerical and algebraic concepts are taught first with solid objects then with diagrams. This study gives support for multiple representations in the sequence of enactive and iconic materials prior to using symbolic materials in teaching algebra concepts.

Lrng, Alg, Rep (MS)

Seo, Kyoung-Hye. (2000). *Children's construction of personal meanings of mathematical symbolism in a reform-oriented classroom.* (Columbia University Teachers College). DAI-A 61/06, p. 2173, Dec 2000. [9976760]

The study investigated the interplay between children's prior ideas, formal mathematics curriculum materials, the teacher's intended curriculum, the enacted curriculum, and the development of children's meanings about mathematical symbolism in a classroom context.

The findings show that first grade children's (n=19) ideas are not easily changed because they felt little conflict and continued to use their own methods.

Curr, Rep, PS, Manp (EC)

Shaffer, David Williamson. (1998). *Expressive mathematics: Learning by design.*(Massachusetts Institute Of Technology). DAI-A 60/08, p. 2881, Feb 2000.

This investigation investigates using an architectural design studio as a model for learning mathematics. This model relies on technology, open-ended activities, iterative work, public presentations, and collaborative conversations. Results showed students do learn mathematics through design, and that students enjoy the design studio.

Curr, Tech, Rep, Tchg, CAI (K-12)

Shavalier, Maria Ellen. (1999). *A study of the effects of structured activities using CAD-like software on the spatial ability of fourth, fifth, and sixth grade students.*(University Of Wyoming). DAI-A 60/07, p. 2417, Jan 2000. [9939273]

This study investigated the Virtus software package's influence on spatial/visualization skills as measured by the Paper Folding Test, Mental Rotations Test, and Eliot-Price Test. Differences in Paper Folding Test scores were found, but no differences were found on other tests. No differences were found for gender or spatial ability level (n=116).

Vis, CAI, Gend, ` (EL)

Shen, Hong. (1999). *Teaching mental abacus calculation to students with mental retardation.*(University Of Illinois At Urbana-Champaign). DAI-A 60/09, p. 3298, Mar 2000. [9944996]

Eighty first graders in China were taught mental abacus calculation as part of their mathematics curriculum. These students performed better on number concepts, computation, and some application and problem solving skills than students who went through a conventional curriculum. No differences were found in measuring abilities or geometric concepts.

LD, Tchg, NSns, PS (EC)

Shih, Jeffrey Chen. (1999). *Building a model of fractions understanding: The influence of procedural solutions.*(University Of California, Los Angeles). DAI-A 60/08, p. 2843, Feb 2000. [9940473]

This dissertation built a new model of fractions understanding based on conceptual understanding. The study suggested that focusing on equivalence and the conceptualization of the unit are promising both in terms of teacher assessment and professional development to build a basis for fractions understanding (n=270).

Frac, Lrng, Prsv (ALL)

Shipley, William James. (1999). *An investigation of college students' understanding of proof construction when doing mathematical analysis proofs.*(The American University). DAI-A 60/07, p. 2417, Jan 2000. [9940004]

The researcher studied learning patterns of students to develop a model of how students write an analysis proof. The model consists of 7 phases in proof writing: strategy, investigations, resource, formalization, authority, and completion. Most students felt it was important to work in groups. Visual representations were not used in a majority of proofs.

Prf, AdvM, Grpg, Vis (PS)

Siebert, Daniel Kevin. (2000). *Coherent, dynamic accounts of prospective secondary mathematics teachers' knowledge of and beliefs about mathematics.*(University Of California, San Diego And San Diego State University). DAI-A 61/05, p. 1775, Nov 2000. [9975029]

This thesis presents accounts of 8 prospective secondary mathematics teachers (PSTs) as they progressed through a unit on division of fractions, designed to change their knowledge of and beliefs about mathematics. Through a series of mathematical explorations, the PSTs were able to develop new understandings for division of fractions.

Prsv, Tknw, TBlf, Frac, M/D (TE, SE)

Silfverberg, Harry Untamo. (1999). *The conceptual geometric knowledge of pupils in the upper level of the comprehensive school.*(Tampereen Yliopisto (Finland)). DAI-C 61/03, p. 642, Fall 2000.

This study focuses on the content and development of conceptual geometric knowledge of 241 pupils in the comprehensive school in Finland. The results do not support the assumption that the order in which the van Hiele levels are achieved is constant, as maintained by the original theory of van Hiele.

Geom, Lrng, Ethn (HS)

Singer, Jessica L. (2000). *A comparison of rate, contingency-shaped, and verbally governed responding to component skills and the effects on the*

mastery and maintenance of composite mathematical operations.(Columbia University). DAI-A 61/04, p. 1281, Oct 2000. [9970281]

Two experiments attempted to determine the effects of three categories of responding to component skills on the acquisition of complex composite mathematical tasks involving those components. Results showed that students who emitted verbally governed responding required more learn units and written operations to criterion than students in the other two categories.

Writ, Oral, LD (ALL)

Sinnemaki, Jussi Yrjana. (1998). *Tietokonepelit ja sisainen motivaatio: Kahdeksan kertotaulujen automatisointip elia.*(Helsingin Yliopisto (Finland)). DAI-C 61/01, p. 14, Spring 2000.

This study examined the relationship between factors of intrinsic motivation and characteristics of a computer game. There was a positive relationship between motivation factors and appraisal of the game. Playing the games increased intrinsic motivation to learn the multiplication tables and increased the mastery of the multiplication tables.

Comp, M/D Aff (EL)

Skinner, Timothy Eaton. (2000). *Presidential Award winners in mathematics at the secondary level: Classroom management beliefs and career stages.*(University Of Montana). DAI-A 61/04, p. 1248, Oct 2000. [9968496]

The 1999 Presidential Awards for Excellence in Mathematics and Science awardees in secondary mathematics were surveyed. The Attitudes and Beliefs of Classroom Control Inventory established that the (n=39) awardees were strongly interactionalist in their attitudes and beliefs regarding classroom management. The predominant career stage was Stage 4.

Clln, TAtt, TBlf (SE)

Sloan, Tina Rye. (1999). *Mathematics anxiety and its relationship to learning styles among preservice elementary teachers.*(The University Of Alabama). DAI-A 60/11, p. 3912, May 2000. [9949406]

This project investigated the correlation between preservice teachers' (n=72) mathematics anxiety levels and their learning style preferences. Qualitative data revealed that certain elements of the mathematics methods course were instrumental in decreasing mathematics anxiety.

Prsv, Anx, Styl, Att (TE)

Smith, Beverly Selkirk. (2000). *Preservice elementary mathematics teachers' developing beliefs and their reactions to alternative assessment practices.*(Columbia University Teachers College). DAI-A 61/06, p. 2227, Dec 2000. [9976762]

This study describes the beliefs of participants about mathematics, the teaching and learning of mathematics and assessment practices before and after they participated in a 3-week assessment unit. The beliefs of the participants (n=37) did not significantly change as a result of their participation in the unit on assessment.

TBlf, Assm, Prsv (TE, EL)

Smith, Dana Michelle. (1999). *Preservice elementary teachers' attitudes toward mathematics and the teaching of mathematics in a constructivist classroom.*(Oklahoma State University). DAI-A 60/10, p. 3599, Apr 2000. [9947745]

The researcher examined the relationship of a constructivist teaching practice in a university content mathematics course with the attitudes of preservice teachers (n=28). Attitudes were found to become more positive after participation in a constructivist classroom.

Lrng, Att, Geom (TE)

Smith, J. Scott. (2000). *Does a classroom emphasis on mental computation assist in mitigating the gender gap?*(The University Of Utah). DAI-A 61/04, p. 1302, Oct 2000. [9968738]

There was a gain in confidence for the group having an 8-week, 10-minute-per-day instructional emphasis on mental computation. Increased proficiency in mental computation may increase students' willingness to use alternative problem solving methods. The sexes may interpret and utilize confidence differently with females feeling more confident in mathematical understanding and males feeling more confident in computational skill.

Gend, Att, Arth, PS (EL)

Smith, Margaret. (2000). *A comparison of the types of mathematics tasks and how they were completed during eighth-grade mathematics instruction in Germany, Japan, and the United States.*(University Of Delaware). DAI-A 61/03, p. 924, Sep 2000. [9965816]

Results indicate lessons in the U.S. include a smaller proportion of Making Connections than in Japan, and Making Connections tasks are rarely completed by Making Connections but by Answers Only or Using Procedures. In Germany

and Japan Making Connections tasks were more frequently implemented consistently with the task statement.

CC, PS, Patt (MS)

Smith, Pamela Karen Maureen. (2000). *A descriptive study of the recent evolution of the mathematics component of the elementary education program at West Virginia University.*(Temple University). DAI-A 61/03, p. 924, Sep 2000. [9966009]

The new teacher preparation program is selective, research-based, content and methods are to be integrated, the mathematical requirements made more rigorous. Students will begin field experience earlier and in the same Professional Development School earning their Masters Degree after 5 years of study.

Prsv, TKnw, IC, Tchg (TE, EL)

Smith, Stephen P. (1999). *Children, learning theory, and mathematics: An analysis of the role of language and representations in children's mathematical reasoning.*(Michigan State University). DAI-A 61/02, p. 539, Aug 2000. [9963413]

Three of the four students were disinclined to move beyond particular problems. While real world problems engage some students in mathematical activities, others explore the phenomena described in the problems. Students' beliefs about mathematics and attitudes towards themselves affect their engagement with the mathematical issues entailed.

Lrng, Lang, PS, Rep, Att, Blf (EC)

Solano Alvarado, Alejandro. (2000). *Building images for the learning of mathematics.*(The Florida State University). DAI-A 61/05, p. 1775, Nov 2000. [9971732]

This study constructed explanations of the ways in which students create imagery when solving geometrical problems that involved the use of visualization. It was evident that when both participants used physical models their sense making process was richer and more dynamic and it provided evidence of the transformation of images.

Lrng, Vis, Geom (ALL)

Spencer, Theresa Marie. (1999). *The systemic impact of integrated learning systems on mathematics achievement of elementary students: A six-year longitudinal study.*(Eastern Michigan University). DAI-A 60/11, p. 3977, May 2000. [9946070]

The primary purpose of this study was to determine the effect of the Jostens Integrated Learning System (ILS) on mathematics achievement of elementary students (n=46). The results revealed no significant difference between students who used the ILS and students who received traditional mathematics instruction. Analyses included comparisons by gender, socioeconomic status, and race.

Tech, Ethn, Gend, Soc (EL)

Steck, Janet Lee. (1999). *A qualitative study of teaching numbers using an approach that is derived from Piagetian theory.*(The University Of Toledo). DAI-A 60/07, p. 2447, Jan 2000. [9937477]

Descriptive information is given about how, and under what circumstances, A Program for Developing a Concept of the Numbers 1 to 100 (PDCN) was effective. The appropriateness of PDCN for students with learning problems was investigated, and findings showed PDCN students learned how to read orally, write, and count the numbers from 1 to 100.

Lrng, LD, NSns (EL)

Stenger, Cynthia Lynne. (1999). *Characterization of university students' mathematical thinking.*(University Of Missouri - Kansas City). DAI-A 60/11, p. 3944, May 2000. [9949202]

In this study, the psychological support structure for mathematics is examined from the integrated viewpoint of mathematical thinking skills. Students (n=137) who demonstrated maturity in mathematical content, as well as thinking processes, also possessed views about mathematics, which are close to those held by mathematicians.

Att, Styl, Blf, Lrnr (PS)

Stone, Walter Ernest, Jr. (1999). *Factors that contribute to teachers' abilities to solve part-whole division problems.*(Boston University). DAI-A 60/08, p. 2844, Feb 2000. [9942403]

Most elementary education graduate students (n=66) could solve part-whole division problems. Fraction type was the most significant factor related to ability to solve the problems. Errors were due to incorrect choice of operation. Fraction type and problem format contributed to teacher inability to identify student errors.

Frac, Prsv, TKnw (TE, EL)

Suurtamm, Christine Anne. (1999). *Beliefs, practices and concerns about authentic assessment: Five case studies of secondary mathematics teachers.*(University Of Toronto). DAI-A 61/01, p. 120, Jul 2000. [NQ45678]

The (n=5) teachers used journals, performance rubrics, checklists, peer- and self- evaluation for their authentic assessments. Key issues voiced by the teachers include a problem-based curriculum, a collaborative teacher culture and administrators that facilitate change in assessment practices.

Assm, Curr, IC (T, SE)

Thomas, Cynthia Skillingberg. (2000). *Understanding of statistical data analysis among elementary education majors* (Montana State University). DAI-A 61/02, p. 575, Aug 2000. [9962231]

Students (n=232) graduating from elementary education programs do not possess the content knowledge required to meet standards. Whatever gains are achieved in content mathematics classes are lost by the end of student teaching. Recommendations are given for changes in mathematics content and methods courses for elementary education majors.

Prsv, TKnw, Curr (TE, EL)

Thomas, Edwin Brian. (1999). *The impact of cognitive and non-cognitive factors on the performance of African American engineering students in mathematics* (Grambling State University). DAI-A 61/04, p. 1323, Oct 2000. [9968132]

Among African American engineering students (n = 276), the variables mathematics application ability, high school mathematics performance, and gender had a direct effect on students' attitudes toward mathematics. There was also a direct linear relationship between attitudes toward mathematics, high school mathematics performance, and mathematics anxiety.

Ethn, Gend, Att, Anx (PS)

Thompson, Anthony Dean. (1999). *A case study of the development of Florida's mathematics standards* (The Florida State University). DAI-A 60/07, p. 2418, Jan 2000. [9939305]

This study found that the political philosophy and reform agenda of the individual writers drove the process of standards writing. Most of the debates surrounding the standards writing centered on issues of language.

Curr, Phil (ALL)

Thompson, Marilyn S. (1999). *Investigating dependency at the classroom and school levels in educational research: A multilevel approach* (University Of Kansas). DAI-A 60/09, p. 3334, Mar 2000. [9947660]

This research on the Third International Math and Science Study found high intercluster correlation between classroom level and achievement outcome, and low intercluster correlation between school level and attitude. This research strongly encourages educational researchers to use multilevel models when analyzing data.

Rsch, Ach, Att (ALL)

Thrun, Jason. (1999). *College students' rational-number-as-operator strategies: A focus on students' coordination of units and distributivity of operators in problem-solving situations* (Northern Illinois University). DAI-A 60/12, p. 4357, Jun 2000. [9955766]

The researcher explored strategies students (n=12) used while engaging in problem-solving activities in the domain of the rational numbers. Students used operator strategies but that this is not necessarily the first strategy used. Students who used this strategy had more success in finding meaningful generalizations to standard problems involving linear functional relationships.

Frac, Lrng (PS)

Thurber, Robin Schul. (1999). *Construct validity of curriculum-based mathematics measures* (University Of Oregon). DAI-A 61/01, p. 87, Jul 2000. [9957576]

Confirmatory factor analysis (n=207) was used to compare four models of mathematics to the data. The best fit to the data was a two-factor model where computation and applications are distinct but related constructs, where curriculum-based mathematics is a measure of computation. Reading is correlated with both mathematics factors.

Assm, Lrng, Lang (EC)

Timmel, Joanne LoGrasso. (1999). *Factors impacting the achievement and participation of high school girls in mathematics* (Fordham University). DAI-A 60/07, p. 2418, Jan 2000. [9938919]

This study showed males and females do not differ in mathematics achievement. Parental encouragement, self-esteem, and mentoring and encouragement of a teacher are important for female mathematical success and continuance to study mathematics. Although these factors are important, they were not significant predictors.

Gend, Att, Blf, Soc (SE)

Toluk, Zulbiye. (1999). *Children's conceptualizations of the quotient subconstruct of rational numbers* (Arizona State University). DAI-A 60/11, p. 3944, May 2000. [9949182]

This research aimed at uncovering how children conceptualize the quotient subconstruct of rational numbers. It appeared that there were four conceptual schemes that children (n=5) constructed in their transition from whole number division to the quotient subconstruct: whole number quotient scheme, fractional quotient scheme, division-as-number scheme, and fraction-as-division scheme.

Frac, Lrng (MS)

Tomoff, Joan Margaret. (1999). *Can student achievement on standardized tests be related to NCTM-recommended teacher practices?* (Arizona State University). DAI-A 60/11, p. 3944, May 2000. [9948376]

Data from the Third International Mathematics and Science Study were used to relate classroom practices and student achievement. Practicing algorithms was negatively correlated, and working from a textbook was positively correlated with scores on the entire mathematics achievement test. Assessment instruments must be designed to evaluate student mathematical knowledge appropriately.

Assm, Ach, Tchg, Lrng (K-12)

Torres, Moises. (1999). *Effects of extending mathematics instruction through a Saturday academy to limited English proficient Latino students in low performing schools.* (University Of California, Irvine). DAI-A 60/08, p. 2844, Feb 2000. [9942725]

Limited English Proficient Latino students (n=464) attended a Saturday Academy to learn mathematics, and 313 students participated as a comparison grou p. Academy students scored higher than the control group on all five dependent measures studied including achievement and student attitudes towards mathematics.

Ethn, Lang, Att, Ach (MS)

Tripp, Joseph S. (1999). *An investigation of changes in college students' conceptions of mathematics and mathematics learning during participation in a reform-based developmental mathematics course.* (Syracuse University). DAI-A 60/09, p. 3298, Mar 2000. [9946510]

Students in a developmental mathematics course (n=15) see mathematics as an expert-based, teacher-centered endeavor. After participating in a reform-based course, students began to see mathematics learning as a student-centered experience. The study focused on understanding and changing students' conceptions of mathematics, and encourages changes in curriculum for all grade levels.

D/R, Msen, Lrng, Curr (PS)

Vaccaro, David Anthony. (2000). *A comparative study of middle school and K--8 school value-added gains in the areas of reading, language, math, science, and social studies.* (The University Of Tennessee). DAI-A 61/06, p. 2175, Dec 2000. [9973519]

The study examined whether academic performance was different in K-8 schools in the East Tennessee Region than it was in middle schools. Results included: seventh grade mathematics favored middle schools, seventh grade science favored middle schools, eighth grade reading favored K-8 schools, and sixth grade reading favored K-8 schools.

Ach (EL)

Van Eck, Richard Neal. (2000). *The effect of advisement and competition on transfer, advisor use, and attitude toward mathematics using a computer-based simulation game.* (University Of South Alabama). DAI-A 61/01, p. 146, Jul 2000. [9961298]

Results of the simulation game with (n=123) seventh and eighth grade students suggest that non-competitive conditions may be best for transfer learning, and high-contextual advisement (video) promotes transfer and positive attitudes towards mathematics and mathematics instruction.

Lrng, Att, PS, Tech (MS)

Vincent, Kimberly McGinley. (1999). *Reciprocity of views and pedagogy: Influence(s) of teacher research on women's views towards mathematics and pedagogy.* (University Of Idaho). DAI-A 60/11, p. 3945, May 2000. [9948264]

This study found that women were frustrated and feared mathematics. They clamored for connections. Connections to their own experiences were important to help them understand the importance, the uses, and to make sense of the algorithms taught in traditional mathematics classes. Women also wanted connection with their instructor.

Gend, Att, Comm (PS)

Vogler, Kenneth E. (2000). *The impact of high-stakes, state-mandated student performance assessment on 10th grade English, mathematics, and science teachers' instructional practices.* (University Of Lowell). DAI-A 61/02, p. 487, Aug 2000. [9961542]

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A 54-question survey (62% of n=257) showed increases of instructional practices deemed "best" practices: increases in open-response questions, critical thinking questions, problem-solving activities, rubrics, writing assignments and inquiry/investigation. There was a decrease in multiple-choice questions, textbook-assignments and lecturing.

Curr, Assm, Tchg, PS (T, HS)

Walker, Rebecca Kathleen. (1999). *Students' conceptions of mathematics and the transition from a standards-based reform curriculum to college mathematics.* (Western Michigan University). DAI-B 61/02, p. 887, Aug 2000. [9954047]

This study examined students' conceptions about mathematics knowledge after four years of a Standards-based, reform high school curriculum. Upon graduation from high school, the students believed that mathematical concepts were slightly more important than formulas. After one semester of college mathematics, there was a statistically significant change in students' beliefs.

Blf, Knw, Curr (HS, PS)

Warneke, Carol Ann. (2000). *Characteristics of help-seekers and non-help-seekers among developmental math students.* (The University Of Akron). DAI-A 61/02, p. 487, Aug 2000. [9963489]

Help-seekers consistently scored higher than non-help-seekers on all scales but test anxiety (n=3943). Learning strategies like rehearsal, elaboration, study space, peer learning all are differentiating factors between help-seekers and non-help seekers with peer learning, working with others, the best single factor.

D/R, Anx, Lrnr (PS)

Washington, Jerrilene. (2000). *Achievement and social-emotional outcomes of a multigraded, accelerated mathematics program.* (The Johns Hopkins University). DAI-A 61/02, p. 539, Aug 2000. [9964225]

The study presents clear evidence that subject acceleration has no harmful effect on the achievement or the social-emotional development of mathematically gifted high school students.

Gift, Ach, Soc, Lrnr (HS)

Wellborn, Earl Franklin, Jr. (1999). *A study of educator perception of outcome factors in mathematics programs.* (University Of Missouri - Columbia). DAI-A 61/03, p. 845, Sep 2000. [9964010]

The sample consisted of principals, mathematics department chairs and mathematics teachers from the nineteen states that make up the North Central Association of Colleges and Schools comprised the geographic boundaries (n=370). Research questions concerning categories rated as useful in the measurement of outcomes were answered.

Assm (SE, T)

Werthessen, Heather West. (1999). *Instruction in spatial skills and its effect on self-efficacy and achievement in mental rotation and spatial visualization* (Columbia University Teachers College). DAI-A 60/07, p. 2418, Jan 2000. [9939566]

High-ability elementary school children (n=105) constructed three-dimensional figures to see if self-efficacy, mental rotation skills, and spatial visualization skills improved. A comparison group used no hands-on activities. A pre-test showed significant gender differences. A post-test showed no gender differences, and significant differences between treatment and control groups.

Geom, Vis, Att, Gend, Gift, Manp (EL)

West, Patty Leight. (1999). *Logico-mathematical instruction: Effect on conservation and mathematical task performance.* (University Of Virginia). DAI-A 60/10, p. 3609, Apr 2000. [9948495]

This study investigated whether there was a relationship between conservation levels and mathematical performance, and whether an intervention focused on improving logico-mathematical skills had an effect on the conservation levels or mathematical performance. This study provided evidence supporting Piaget's theory about the relationship between conservation and mathematics.

Lrng, Tchg , Ach (EL)

Westberry, Richard. (2000). *The perceived use of mathematics in selected high demand occupations: Aligned with the National Council of Teachers of Mathematics Standards* (University Of South Florida). DAI-A 61/04, p. 1282, Oct 2000. [9968837]

This study examined patterns and frequency of use of mathematics reported by a sample of 306 workers in six selected occupations across Florida and compared these patterns to the mathematics called for in the NCTM Standards. The results indicated differences in the reported use of mathematics in individual occupations.

Curr (ALL)

Westreich, Galeet BenZion. (2000). *An analysis of kinesthetic learners' responses: Teaching mathematics through dance.*(The American University). DAI-A 60/12, p. 4224, Jun 2000. [9954121]

This research advocates that mathematical-thinking develops through exploration that is tightly connected with real and meaningful experiences. This researcher's position is that Kinesthetic learners fail mathematics tests because they are not given the opportunity to explore mathematics through situations that most make sense to them.

Lrng, Styl, Lrnr, Geom (K-12)

White, Andrew Martin. (2000). *Relationships among three organizational methods of teaching mathematics in selected middle school classes.*(Southern Illinois University At Edwardsville). DAI-A 61/04, p. 1282, Oct 2000. [9968472]

The purpose of this study was to examine three methods of teaching mathematics and to determine any relationships between achievement and the method used in selected classrooms. Results of the multivariate analysis of variance (MANOVA) determined that treatment effects yielded no significant differences in achievement nor attitude (n=284).

Tchg, Ach, Att (K-12)

White, Paula Michele. (2000). *Promoting mathematics achievement, academic efficacy, and cognitive development of at-risk adolescents through deliberate psychological education.*(University Of Houston). DAI-A 61/03, p. 887, Sep 2000. [9965210]

The deliberate psychological education (DPE) intervention was effective at promoting mathematics achievement and efficacy among eighth-grade tutees at risk of dropping out of school.

D/R, Att, Ach (MS)

Wiken, Don B. (1999). *Entering teacher education candidates' mathematical beliefs and correlations with personal demographics.*(University Of South Dakota). DAI-A 60/09, p. 3299, Mar 2000. [9946688]

Preservice mathematics teachers' (n=281) beliefs tend to conflict with about half of the standards. The preservice teachers agree with beliefs that were global and open to interpretation of their implementation, but disagreed with beliefs that require specific changes in teaching methods.

Blf, Lrng, Gend, Curr (TE)

Willner, Elizabeth Harden. (1999). *A descriptive study of factors related to preservice teachers' written responses to children's literature with geometric content* (Oklahoma State University). DAI-A 60/10, p. 3626, Apr 2000. [9947752]

This study described preservice teachers' (n=85) written responses to children's literature with geometric content correlated the content and stances of their responses with geometric and orientation toward literature. There was no relationship found between the written responses and the van Hiele scores, nor between the written responses and the Literary Response Questionnaire.

Geom, Lrng, Writ, Lang, Patt (TE)

Woggon, Ronald Frank. (2000). *Students' perceptions of learning mathematics: A phenomenological study of learning moments in secondary mathematics classes.*(The Claremont Graduate University). DAI-A 61/05, p. 1775, Nov 2000. [9973059]

This study built a definition of learning from the perspective of those learners old enough to possess vast amounts of knowledge about how they learn. Students had perceived their best learning moments as a tension between two competing concerns, their concern over precision and their concern over purpose.

Lrng, Knw (SE)

Wolfe, Fancher Elbert. (1999). *Levels of Piagetian development among adult mathematics students.*(University Of Minnesota). DAI-A 60/09, p. 3239, Mar 2000. [9947011]

This study showed that adult students (n=236) aged 22 to 56 are equally distributed across Piagetian stages of cognitive ability (concrete operational, transitional, formal operational). More males are at the formal operational level, and more females are at the concrete operational level. There is a positive correlation between mathematical proficiency and cognitive level.

Lrnr, Lrng, Impl (PS)

Wood, Betty Kay. (1999). *A follow-up study of students who were eligible to participate in the Gifted Math Program (GMP) at the University of Arkansas at Little Rock.*(Purdue University). DAI-A 60/11, p. 3945, May 2000. [9952202]

The purpose of this study was to investigate the impact the Gifted Math Program (GMP) had upon elementary and secondary students who participated in this special program (n=100). The participants felt challenged and experienced

intellectual growth. In general, participants who responded were pleased with their experience in the GMP.

Gift, Ach, Aff, Att (K-12)

Woodbury, Sonia S. (2000). *The reform of practice and the practice of reforms: Teachers and change in high school mathematics* (The University Of Utah). DAI-A 61/04, p. 1333, Oct 2000. [9967766]

The focus of this study was teachers' thinking about change or reform. Particular elements such as tests, daily schedules, available time and space for collaboration and reflection, professional development, reform oriented curriculum materials, and a strong culture of sharing influenced teachers' ability to implement reforms.

TBlf, Curr, Insv (T, HS)

Wottreng, Kristen Anderson. (1999). *Computer methods in descriptive and differential geometry Monge's legacy* (University Of Illinois At Chicago). DAI-A 60/08, p. 2844, Feb 2000. [9941514]

The life and work of Monge is studied in-depth. The dissertation applies Monge's methods to teaching differential geometry in today's undergraduate classroom using Geometer's Sketchpad and Maple V.5.

Geom, Lrng, Comp, CAI (PS)

Wyeth, Margaret Helen. (2000). *Precalculus students' problems in understanding variables, an intervention, and its effect* (University Of Victoria (Canada)). DAI-A 61/03, p. 924, Sep 2000. [NQ47300]

The intervention consisted of making explicit the contextual interpretations of variables and expressions. Student response was very positive. For students continuing to calculus the intervention was associated with better grades while those not continuing showed no difference between treatment and control group.

Calc, Alg, Rep, NSns (HS)

Yuan, Yuan. (1999). *The impact of student learning style and classroom environment interactions on the development of the function concept in college algebra students* (University Of Northern Colorado). DAI-A 60/07, p. 2418, Jan 2000. [9939775]

No interactions were found between student learning style and classroom environment as college algebra students (n=72) studied the function concept.

Styl, Clln, Alg, Calc, (PS)

Ziegler, John F. (2000). *Constructivist views of teaching, learning, and supervising held by public school teachers and their influence on student achievement in mathematics* (Indiana University Of Pennsylvania). DAI-A 61/01, p. 54, Jul 2000. [9959147]

Results confirm research supporting the positive effect of constructivist learning practices. An emphasis on problem solving was positively related to student achievement in mathematics. School setting, teaching experience, gender, and minority status are all related to the use of constructivist teaching, learning, and supervision.

Lrng, Tchg, Soc, Ach (ALL)

Zopp, Marilyn Ann. (1999). *Math anxiety, the adult student, and the community college* (Northern Illinois University). DAI-A 60/09, p. 3264, Mar 2000. [9946578]

In this case study, adult students (n=8) who participated in a program to help reduce math anxiety experienced a change in their feelings about math ability, confidence about math achievement, willingness to ask for help, development of career goals, and recognition of math connections to work and life.

Anx, Att (PS)

Zorroza Ruesta, Jesus. (1995). *Mathematical problem-solving: Experimental study of cognitive processes* (Universitat De Valencia (Spain)). DAI-C 61/03, p. 891, Fall 2000.

This research is about knowledge, structures and cognitive processes implicated in capacity to mathematical word problem solving. The analysis we have made make clear that the schemata play an important part in mathematical achievement and its unmistakable relationship with mental representation and problem solving process.

Knw, Lrng, PS, Ach (ALL)

Dissertations by Institution

Canada

University Of Alberta
Dodsworth; Gordon Calvert

University Of Toronto
Folk; McCall; Suurtamm; Moss

University Of Victoria
Wyeth

McGill University
O'Connor

Finland

Tampereen Yliopisto
Kupari; Silfverberg

Helsingin Yliopisto
Sinnemaki

People's Republic Of China

Chinese University Of Hong Kong
Kong; Ma

South Africa

University Of Pretoria
Matthee

Spain

Universitat De Valencia
Guillen Soler; Huerta Palau; Zorroza Ruesta

Sweden

Goteborgs Universitet
Runesson

United States

American University
Bell; Beyers; Higginbotham; Shipley; Westreich

Arizona State University
Bote; Olkun; Rho; Toluk; Tomoff

Auburn University
Barlow; Painter; Robichaux

Ball State University
Jones

Baylor University
Heckemeyer

Boston College
Fierros; McAdam

Boston University
Stone

Carnegie-Mellon University
Boats; Haverty

Central Michigan University
Seaman

Claremont Graduate University
D'Souza; Goycochea; Rudd; Woggon

Claremont Graduate University And San Diego State University
Jacobson

College Of William And Mary
Hervey

Columbia University
Gmingue; Russell; Singer

Columbia University Teachers College
DeCesare; Diamantis; Liberant; Liptak; Myers; Sassano; Seo; Smith; Werthessen

Cornell University
Haarer; Rowe

Duquesne University
Ittigson

Eastern Michigan University
Spencer

Emory University
Graham

Fielding Institute
Brogan

Florida Atlantic University
Gray

Florida Institute Of Technology
Kermani

Florida State University
Berger; Hall; Herring; Ortiz; Solano Alvarado; Thompson

Fordham University
Barbato; Timmel

Georgia Southern University
Lacefield

Georgia State University
Creed; Nissen; Rodeheaver

Grambling State University
Thomas

Howard University
Manswell Butty

Idaho State University
Coffland

Illinois State University
Bohn

Indiana State University
Eisele

Indiana University
Saam

Indiana University Of Pennsylvania
Gales; Rotigel; Ziegler

Iowa State University
Barnet; Ohana

Johns Hopkins University
Washington

Louisiana State University and Agricultural And Mechanical Col.
McNabb

Loyola University Of Chicago
Breunlin; Scott

Marquette University
Pustejovsky

Marywood University
Miller

Massachusetts Institute Of Technology
Shaffer

Michigan State University
Geist; Rodriguez; Smith

Mississippi State University
Logan

Montana State University
Beaudrie; Thomas

New York University
Abramowitz; de Groot

North Carolina State University
Alford; Brandsma; Cates; Krakowski; Petway; Rowell

Northern Arizona University
Bejarano; Harnish

Northern Illinois University
Drew; Thrun; Zopp

Northwestern University
Eliaser; Hufferd-Ackles; Lee

Nova Southeastern University
Hayakawa; Kindel

Ohio State University
Brown; Ferdinand; Hart; Lee; Miller; Reed

Ohio University
Cicmanec

Oklahoma State University
Craig; Miller; Smith; Willner

Oregon State University
Buckreis; Cho; Conner

Peabody College For Teachers Of Vanderbilt University
McGatha

Purdue University
Cottrill; Mandell; Wood

Rutgers The State University Of New Jersey - New Brunswick
Kovarik

Saint Louis University
Bluette; Holschen

Seattle Pacific University
Newbill

Southern Illinois University At Edwardsville
White

St. John's University
Lenz; Moore; Oberer

State University Of New York At Albany
Giuliano; Lawler

State University Of New York At Buffalo
Burns; Gerber; Roy

Syracuse University
Duah-Agyeman; Powers; Tripp

Temple University
Smith

Tennessee State University
Brien; Lucas

Texas A&M University
Arp; Cmajdalka; Cuellar; Dimiceli

Texas A&M University-Commerce
Armstrong

University Of Akron
Warneke

University Of Alabama
Fortner; Mintz; Powell; Sloan

University Of Alabama At Birmingham
Emfinger

University Of Alberta
Rahim; Robinson

University Of Arizona
Sakamoto

University Of California, Davis
Kysh

University Of California, Irvine
Torres

University Of California, Los Angeles
Ai; Ballon; Biagetti; Carrillo; Chizhik; Crockett; Kawanaka; Kazemi; Pinon; Priselac; Ryan; Shih

University Of California, San Diego
Rosen

University Of California, San Diego And San Diego State University
Siebert

University Of Central Florida
Lee

University Of Cincinnati
Carvan; Eisenhardt

University Of Colorado At Boulder
Haug; Knuth

University Of Connecticut
Madaus

University Of Delaware
Smith

University Of Florida
Isaacson

University Of Georgia
Biddlecomb; Jeon; Lingefjard; Park

University Of Houston
Cole; Henthorne; White

University Of Idaho
Pitsch; Vincent

University Of Illinois At Chicago
Wottreng

University Of Illinois At Urbana-Champaign
Alghazo; Alsawaie; Hsieh; Shen

University Of Kansas
Lucas; Thompson

University Of Kentucky
Bausch; Browning; Decker; Miller

University Of Louisville
Jones

University Of Lowell
Beckett; Vogler

University Of Maryland College Park
Cerkovnik; Kahan

University Of Memphis
Hutson

University Of Michigan
Collopy; Fredricks

University Of Minnesota
Makanong; Wolfe

University Of Mississippi
Johnson

University Of Missouri - Columbia
Barger; Bay; Novinger; Wellborn

University Of Missouri - Kansas City
Stenger

University Of Missouri - Saint Louis
Chung

University Of Montana
Skinner

University Of Nevada, Las Vegas
Butler; Glickman

University Of New Mexico
Cronin

University Of New Orleans
Hamtini

University Of North Carolina At Chapel Hill
Ridge

University Of North Carolina At Charlotte
Freshcorn

University Of North Dakota
O'Donnell

University Of Northern Colorado
Belloso; Hald; Kloster; Lee; Yuan

University Of Oklahoma
Ahmadifar; Braddy; Darby; Krows

University Of Oregon
Thurber

University Of Pittsburgh
Jakabcsin; Li

University Of San Francisco
Garcelon

University Of San Francisco
Selzer

University Of South Alabama
Haynes; Morrow; Van Eck

University Of South Carolina
Brown

University Of South Dakota
Breen; Wiken

University Of South Florida
Westberry

University Of Southern Mississippi
Collie-Patterson; Gann; Hebert; McKenzie

University Of Tennessee
Dell'Isola; Owens; Pratt; Ribble; Sanders; Vaccaro

University Of Texas At Arlington
Durmus

University Of Texas At Austin
Davila Hernandez; Givens; Harder; McCarthy

University Of The Pacific
Johnson

University Of Toledo
Fornof; Steck

University Of Utah
Smith; Woodbury

University Of Virginia
Drier; Pullano; West

University Of Wisconsin - Madison
Koehler

University Of Wisconsin - Milwaukee
Chan

University Of Wyoming
Rizor; Shavalier

Vanderbilt University
Calhoon

Walden University
DeMille

Wayne State University
Chambers; Erickson

West Virginia University
Gasiorowski

Western Michigan University
Coffey; Walker

Wilmington College (Delaware)
Matthews

Research Articles in Mathematics Education Published in 2000

Carija Nair, *The Ohio State University*
Michelle K. Reed, *Wright State University*

This section lists 55 articles in mathematics education research that were published in 2000. Each entry is coded (see *Key to Codes*) with one to three major topic codes (in bold type) and any number of minor topic codes, as well as the grade level code (in parentheses). Studies related to preservice or inservice teacher education are indicated by the appropriate codes (Prsv, Insv). The level designated for teacher education or teacher studies indicates the grade level(s) at which the intern or teacher participants teaches, followed by the level code, "T" for teacher or "TE" for teacher education. All entries are indexed by major codes at the end of the volume (see page 69). A list of the journals searched and the number of articles included from each is provided at the end of this section (see page 55).

Anthony, Glenda. (2000). Factors influencing first-year students' success in mathematics. *International Journal of Mathematical Education in Science and Technology*, 31(1), 3-14.

This study identifies factors that seem to contribute to students' academic success or failure. The study indicates areas of similarities and differences in lecturers' and students' perceptions about success and failure and its contributing factors.

Ach, Att, Aff (PS)

Baker, Bernadette; Cooley, Laurel; Trigueros, Maria. (2000). A calculus graphing schema. *Journal for Research in Mathematics Education*, 31(5), 557-578.

Students (n=41) enrolled in college engineering, mathematics, and science programs were asked to sketch the graph of a function given its analytic properties and showed some understanding of the analysis of the first derivative, but lack of conception about the second derivative.

Calc, Msen, (PS)

Baranchik, Alvin; Cherkas, Barry. (2000). Correcting grade deflation caused by multiple-choice scoring. *International Journal of Mathematical Education in Science and Technology*, 31(3), 371-380.

This study involves three sections of four-year college pre-calculus (n=181) where partial credit scoring on multiple-choice questions were examined over an entire semester and finds in favor of multiple choice testing in measuring students' subject knowledge.

Assm, Knw, Calc (PS)

Boaler, Jo. (2000). Exploring situated insights into research and learning. *Journal for Research in Mathematics Education*, 31(1), 113-119.

This study explores insights provided by a situated perspective on learning. The researcher analyzes how classroom behaviors and practices increase students' mathematical understanding, knowledge production, and use.

Lrng, Ps, CLIn (SE)

Brodie, Karin. (2000). Teacher intervention in small-group work. *For the Learning of Mathematics*, 20(1), 9-16.

This article describes a study of a ninth-grade classroom that consisted of five groups of 3-5 pupils working on a geometric project. The author concludes that small group projects bring new challenges for mathematics teachers.

Tchg, Grpg (SE)

Burton, Leone; Morgan, Candia. (2000). Mathematicians writing. *Journal for Research in Mathematics Education*, 31(4), 429-453.

Analysis of 53 published papers authored by research mathematicians revealed substantial variations in aspects of mathematicians' writing in the identities those mathematicians present to the world and the ways in which they represent the nature of mathematical activity.

Writ, (PS)

Clements, Douglas H.; Burns, Barbara A. (2000). Students' development of strategies for turn and angle measure. *Educational Studies in Mathematics*, 41(1), 31-45.

This research reports that gifted fourth grade students did not show initial difficulties with turn commands as previously reported in mixed populations, and that strategies were determined to correct and estimate direction and amount of turn.

Meas, Gift, Lrng (EL)

BEST COPY AVAILABLE

Cox, W. (2000). Predicting the mathematical preparedness of first-year undergraduates for teaching and learning purposes. *International Journal of Mathematical Education in Science and Technology*, 31(2), 227-248.

This research describes the initial assessment of knowledge and skills desired in various mathematics programs and discusses how those findings are used to design appropriate teaching, learning, and assessment strategies for students of backgrounds.

Assm, Knw, Tchg (SE)

Davis, Edward J.; Barnard, Jane T. (2000). What seems to be happening in mathematics lessons? Findings from one school system and five student teachers. *Mathematics Educator*, 10(1), 11-18.

This article discusses how students process information in typical mathematics lessons. The researcher also analyzes whether this focus indicates a balanced program with respect to procedural knowledge, conceptual knowledge, and mathematical activity.

Lrng, Prsv, Tchg (EL)

De Abreu, Guida. (2000). Relationships between macro and micro socio-cultural contexts: Implications for the study of interactions in the mathematics classroom. *Educational Studies in Mathematics*, 41(1), 1-29.

This author clarifies the relationship between macro and micro social contexts as portrayed in Vygotskian and Neo-Piagetian theories. The author encourages utilizing these insights to broaden interactive learning in mathematics classrooms and presents such new ideas.

CC, PS, Lrng (EL)

Ebby, Caroline Brayer. (2000). Learning to teach mathematics differently: The interaction between coursework and fieldwork for preservice teachers. *Journal of Mathematics Teacher Education*, 3(1), 69-97.

This study explores the perceptions of three preservice elementary teachers as students of university methods courses and as teachers of mathematics. Study concludes that methods courses should help teachers learn from their own teaching.

TKnw, Prsv, Tchg (EL, T)

Enochs, Larry G.; Smith, Phillip L.; Huinker, DeAnn. (2000). Establishing factorial validity of the mathematics teaching efficacy beliefs instrument. *School Science and Mathematics*, 100(4), 194-202.

The study discusses the Mathematics Teaching Efficacy Belief Instrument (MTEBI) for preservice teachers, which consists of 13 items on the Personal Mathematics Teaching Efficacy (PMTE) subscale and eight items on the Mathematics Teaching Outcome Expectancy (MTOE) subscale.

Meas, Prsv, Tatt (SE)

Forgasz, Helen J.; Leder, Gilah C. (2000). Perceptions of the tertiary learning environment: Is mathematics worth the effort? *International Journal of Mathematical Education in Science and Technology*, 31(1), 37-42.

This article discusses data from surveys (n=1883) and interviews (n=71) with students of tertiary mathematics courses at five Australian universities. Study reveals considerable variations in the quality of teaching and student support available in various mathematics departments.

Tchg, Att, (PS)

Friel, Susan N.; Carboni, Lisa W. (2000). Using video-based pedagogy in an elementary mathematics methods course. *School Science and Mathematics*, 100(3), 118-127.

This research explores the impact of video-based pedagogy on preservice teachers' cognitions about teaching mathematics. Study revealed that teachers after engaging in reflection and reconstruction of their beliefs about children's learning process shifted towards student-centered approach.

Prsv, Tech, Tchg (SE)

Fuson, Karen C.; Carroll, William M.; Drueck, Jane V. (2000). Achievement results for second and third graders using the Standards-based curriculum Everyday Mathematics. *Journal for Research in Mathematics Education*, 31(3), 277-295.

Tests of 392 second and third graders found that students using Everyday Mathematics were at normative U.S. levels on multidigit addition and subtraction symbolic computation.

Curr, Arth, Ach (EL)

Grover, Barbara W.; Connor, Jeffery. (2000). Characteristics of the college geometry course for preservice secondary teachers. *Journal of Mathematics Teacher Education*, 3(1), 47-67.

College geometry courses were analyzed with regard to content, pedagogy, and assessment

based on 30 syllabi and 108 questionnaire responses from U.S. colleges and universities. The article reports evidence of common characteristics while diversity exists.

Geom, Curr, (SE, TE)

Hanson, Shari A.; Hogan, Thomas P. (2000). Computational estimation skill of college students. *Journal for Research in Mathematics Education*, 31(4), 483-499.

An examination of the computational estimation skills of (n=77) college students found that students correctly estimated answers to most problems on addition and subtraction of whole numbers, they performed poorly on multiplication and division of decimals and subtraction of fractions.

Est, Frac, Decm (PS)

Healy, Lulu; Hoyles, Celia. (2000). A study of proof conceptions in algebra. *Journal for Research in Mathematics Education*, 31(4), 396-428.

After surveying high-attaining 14- and 15-year-old students about proof in algebra, students were found to have simultaneously held two different conceptions of proof: those arguments they considered would receive the best mark and those about arguments they would adopt for themselves.

Prf, Alg (HS)

Ho, Hsiu-Zu; Lam, Amy G.; Zimmer, Jules M.; Hong, Sehee; Okamoto, Yukari; Chiu, Sou-Yung; Nakazawa, Yasuo; Wan, Chang-Pei. (2000). The affective and cognitive dimensions of math anxiety: A cross-national study. *Journal for Research in Mathematics Education*, 31(3), 362-379.

Measures of math anxiety and mathematics achievement of 671 sixth-grade students from China, Taiwan, and the U.S. showed that math anxiety was significantly related to mathematics achievement in the negative direction across nations. Gender was also found to be significant for both affective and cognitive math anxiety.

CC, Anx, Ach, Gend (MS)

Huntley, Mary Ann; Rasmussen, Chris L.; Villarubi, Roberto S.; Sangtong, Jaruwan; Fey, James T. (2000). Effects of Standards-based mathematics education: A study of the Core-Plus Mathematics Project algebra and functions strand. *Journal for Research in Mathematics Education*, 31(3), 328-361.

This comparative study of the effects of the Core-Plus Mathematics Project (CPMP) curriculum and more conventional curricula indicated that the CPMP was more effective in developing student ability to solve algebraic problems when those problems are presented in realistic contexts and when students are allowed to use graphing calculators, but that conventional curricula are more effective in developing student skills in manipulation of symbolic expressions in algebra when those expressions are presented free of application context.

Curr, Alg, GCal (HS)

Imai, Toshihiro. (2000). The influence of overcoming fixation in mathematics towards divergent thinking in open-ended mathematics problems on Japanese junior high school students. *International Journal of Mathematical Education in Science and Technology*, 31(2), 187-193.

This investigation of Japanese junior high school students. found that students who can overcome fixation in mathematics can contribute varied and original ideas in open-ended situations in mathematics.

Curr, CC, PS (SE)

Jacobson, Cathy; Lehrer, Richard. (2000). Teacher appropriations and student learning of geometry through design. *Journal for Research in Mathematics Education*, 31(1), 71-88.

The authors discuss how four second-grade classes learned transformational geometry and symmetry by designing quilts while teachers participated in professional development on understanding children's thinking in arithmetic, and students' spatial and geometrical thinking.

Geom, Insv, Tchg (EL)

Johanning, Debra I. (2000). An analysis of writing and post writing group collaboration in middle school pre-algebra. *School Science and Mathematics*, 100(3), 151-160.

This study was an analysis of how middle school students approach problem solving while writing descriptions of why and how they solve problems. Study revealed that writing helped deeper learning in small-group discussion in mathematics.

Grpg, Writ, PS, (MS)

Krummheuer, Gotz. (2000). Mathematics learning in narrative classroom cultures: Studies of argumentation

in primary mathematics education. *For the Learning of Mathematics*, 20(1), 22-32.

This research involves an interactional theory of content-related classroom learning. The author clarifies the concept of culture, reflects on reconstructed classroom culture, and presents empirical results to create a theory of interaction of content-related learning.

Lrng, CC, Clln (EL)

Lawson, Michael J.; Chinnappan, Mohan. (2000). Knowledge connectedness in geometry problem solving. *Journal for Research in Mathematics Education*, 31(1), 26-43.

The author examines the relationship between problem-solving performance and students' knowledge organizational skills. The research reports the extent to which content and connectedness indicators differentiated between groups of high-achieving and low-achieving geometry students.

Geom, Meas, PS, Tchg (SE)

Leach, Sue; Bowling, Jenny. (2000). A classroom research project: ESL students and the language of mathematics. *Australian Primary Mathematics Classroom*, 5(1), 24-27.

This research describes ways to assist ESL students with difficulties in mathematics writing. Study reveals the importance of retrieving and transforming students' mathematics knowledge into their own words, and then translating it into mathematical language.

Lang, Tchg, (EL)

Lee, Mary A.; Messner, Shelley J. (2000). Analysis of concatenations and order of operations in written mathematics. *School Science and Mathematics*, 100(4), 173-180.

This study was a survey of texts of grades 6 through 9 and makes quantitative and qualitative analyses of the instructional emphasis on selected topics. Study indicates minimal curricular emphasis on signed numeral forms compared to unsigned numeral forms.

Curr, Arth (SE)

Lehrer, Richard; Schauble, Leona. (2000). Inventing data structures for representational purposes: Elementary grade students' classification models. *Mathematical Thinking and Learning*, 2(1-2), 51-74.

The authors investigated children's understanding of data and classification by studying three intact classrooms over several sessions to categorize drawings made by children and progressively mathematize their categorization rules.

Rep, Stat, Lrng (EL)

Li, Yeping. (2000). A comparison of problems that follow selected content presentations in American and Chinese mathematics textbooks. *Journal for Research in Mathematics Education*, 31(2), 234-241.

This author compares integer addition and subtraction topics presentation in several U.S. and Chinese mathematics textbooks and provides a cross-national comparison and analysis of mathematics experiences between the U.S. and China.

Arth, CC, Curr (MS)

Lubienski, Sarah Theule. (2000). Problem solving as a means toward Mathematics for All: An exploratory look through a class lens. *Journal for Research in Mathematics Education*, 31(4), 454-482.

The researcher examined 7th graders' experiences with a problem-centered curriculum and pedagogy, focusing on SES differences in students' reactions to learning mathematics through problem solving. Suggests that class cultural differences could relate to students' approaches to learning mathematics through solving open, contextualized problems.

PS, Eqty, Ethn (MS)

Miyazaki, Mikio. (2000). Levels of proof in lower secondary school mathematics. *Educational Studies in Mathematics*, 41(1), 47-68.

This study establishes six levels from an algebraic inductive proof, examines the meanings of demonstration and proof in lower secondary school mathematics, shows the interrelationships, and illustrates the discussion with a seventh grade student's activities.

Prf, Tchg (SE)

Montis, Kristine K. (2000). Language development and concept flexibility in dyscalculia: A case study. *Journal for Research in Mathematics Education*, 31(5), 541-556.

This case study of a 12-year-old student who displayed many characteristics of dyscalculia showed that the student's learning experiences

during her school mathematics and tutoring sessions demonstrate the vital role language processes play in the development of the concept flexibility necessary for success in mathematics.

LD, Lang (MS)

Nathan, Mitchell J.; Koedinger, Kenneth R. (2000). Teachers' and researchers' beliefs about the development of algebraic reasoning. *Journal for Research in Mathematics Education*, 31(2), 168-190.

This paper presents research in which researchers and mathematics teachers ordered arithmetic and algebra problems based on predicted students' problem-solving difficulty. Discussions on how students' algebraic reasoning differs from predicted difficulty is also presented here.

Alg, Tchr, Mscn, Alg (HS, T)

Nicaise, Molly; Gibney, Terresa; Crane, Michael. (2000). Toward an understanding of authentic learning: Student perceptions of an authentic classroom. *Journal of Science Education and Technology*, 9(1), 79-94.

The authors describe students' perceptions of a large midwestern high school's unique learning environment. Most students described learning as fun and exciting with real world relevance while some students indicated otherwise and found themselves unsuccessful.

Styl, Att, Blf (HS)

Outhred, Lynne N.; Mitchelmore, Michael C. (2000). Young children's intuitive understanding of rectangular area measurement. *Journal for Research in Mathematics Education*, 31(2), 144-167.

This research focuses on strategies that young children (n=115) use to solve rectangular covering tasks before area measurement instruction. The paper emphasizes how learning rectangular covering demands the understanding of unit sizes and rectangular dimensions.

Meas, Manp, (MS)

Ozgun-Koca, S. Asli. (2000). Mathematics education computer software and mathematics teachers. *Ohio Journal of School Mathematics*, 41, 17-21.

This study on mathematics computer software indicates respondents favored software use to enhance discovery and remediation. Teachers believed that the software attributed to real world situations and multiple representations.

CAI, Rep, Tech (SE, T)

Pang, JeongSuk; Good, Ron. (2000). A review of the integration of science and mathematics: Implications for further research. *School Science and Mathematics*, 100(2), 73-82.

The authors review studies that compare epistemological debates in mathematics and science education, bases used to emphasize science over mathematics or vice versa, and empirical evidence of the effectiveness of integration of mathematics and science.

Curr, Impl, IC, Phil (K-12)

Pesek, Dolores D.; Kirshner, David. (2000). Interference of instrumental instruction in subsequent relational learning. *Journal for Research in Mathematics Education*, 31(5), 524-540.

In this study of five fifth-grade mathematics classes, students who received only relational instruction outperformed a group of students who received instrumental instruction prior to relational instruction.

Tchg, Arth (MS)

Pickreign, Jamar; Capps, Lelon R. (2000). Alignment of elementary geometry curriculum with current standards. *School Science and Mathematics*, 100(5), 243-251.

This examination of geometry language used in K-6 textbooks and compared to modern mathematics standards documents showed a substantial misalignment between the geometry presented in textbooks against national standards.

Curr, Geom (EL)

Povey, Hilary; Ransom, Myka. (2000). Some undergraduate students' perceptions of using technology for mathematics: Tales of resistance. *International Journal of Computers for Mathematical Learning*, 5(1), 47-63.

This study focuses on students' tales of resistance, although many students were positive about the use of information technology for teaching and learning on a range of undergraduate mathematics courses.

CC, Comp, Att (PS)

Pratt, Dave. (2000). Making sense of the total of two dice. *Journal for Research in Mathematics Education*, 31(5), 602-625.

A novel approach was used with (n=16) 10- to 11-year-olds in this study, in which young children articulated their meanings for chance through their attempts to mend possibly broken computer-based stochastic gadgets.

Prob, Comp, (MS)

Ridlon, Candice L. (2000). Christi makes sense of sixth-grade mathematics. *Mathematics Teaching in the Middle School*:, 5(6), 367-373.

This research paper discusses experiences using a new mathematics curriculum with sixth grade students for nine weeks. It also presents a student's discovery of her power in mathematics through this problem-centered curriculum.

Curr, PS, Blf (MS)

Sfard, Anna. (2000). Steering (dis)course between metaphors and rigor: Using focal analysis to investigate an emergence of mathematical objects. *Journal for Research in Mathematics Education*, 31(3), 296-327.

This study deals with students' construction of mathematical objects. The basic claim is that the need for communication--any attempt to evoke certain actions by others--is the primary driving force behind all human cognitive processes.

Comm, Mteg (K-12)

Stuart, Vanessa B. (2000). Math curse or math anxiety? *Teaching Children Mathematics*, 6(5), 330-335.

This study explored the phenomenon of math anxiety in elementary school students by using a survey to identify where students fit into the continuum of mathematics confidence.

Anx, Att, Arth (EL)

Sullivan, Peter; Warren, Elizabeth; White, Paul. (2000). Students' responses to content specific open-ended mathematical tasks. *Mathematics Education Research Journal*, 12(1), 2-17.

This study examines responses from 1200 students to comparable closed- and open-ended tasks and explores the effect of using specific contexts for such tasks. Study concludes that both open-ended and closed tasks provide effective contributions.

Assm, Ach, (MS)

Swafford, Jane O.; Langrall, Cynthia W. (2000). Grade 6 students' preinstructional use of equations to describe and represent problem situations. *Journal for Research in Mathematics Education*, 31(1), 89-112.

This investigation of how 6th-grade algebra students use equations to describe and represent problem situations before formal instruction raises questions about the most appropriate curriculum for building on students' intuitive knowledge of algebra.

Alg, PS, Rep (MS)

Szydlik, Jennifer Earles. (2000). Mathematical beliefs and conceptual understanding of the limit of a function. *Journal for Research in Mathematics Education*, 31(3), 258-276.

Investigation of 27 university calculus students' mathematics beliefs and connections between those beliefs and their understandings of limit suggest that students with external sources of conviction gave more incoherent or inappropriate definitions of limit.

Calc, Blf, Mscn (PS)

Tarr, James E.; Mittag, Kathleen Cage; Uekawa, Kazuaki; Lennex, Lesia. (2000). A comparison of calculator use in eighth-grade mathematics classrooms in the United States, Japan, and Portugal: Results from the Third International Mathematics and Science Study. *School Science and Mathematics*, 100(3), 139-150.

Study of calculator use among 13-year-old Japanese, Portuguese and U.S. children, revealed higher use for U.S. and Portuguese children and found a negative relationship correlation for calculator use and performance in Japan.

Cltr, Curr, CC (MS)

Tirosh, Dina. (2000). Enhancing prospective teachers' knowledge of children's conceptions: The case of division of fractions. *Journal for Research in Mathematics Education*, 31(1), 5-25.

This article discusses an attempt to promote elementary teachers' knowledge of fraction division as well as their awareness of children's common misconceptions. The study indicates how mathematics methods course helped participants explain the fraction division procedure.

TKnw, Prsv, Frac (EL, T)

Walen, Sharon B.; Williams, Steven R. (2000). Validating classroom issues: Case method in support of teacher change. *Journal of Mathematics Teacher Education*, 3(1), 3-26.

This study discusses the use of case methods in teachers' professional development setting,

implementing an innovative four-year mathematics curriculum. Study suggests that the cases proved powerful in helping teachers acknowledge and address their classroom concerns.

TBlf, Curr, (TE)

Watson, Anne. (2000). Mathematics teachers acting as informal assessors: Practices, problems and recommendations. *Educational Studies in Mathematics*, 41(1), 69-91.

This study identifies components of teachers' practices as assessors of students' mathematics classroom work. Study indicates that even teachers with assessment training may underestimate the role of evidence interpretation and issues of equity while assessing students.

Assm, Eqty, Tchg (EL)

Watson, Jane M.; Moritz, Jonathan B. (2000). Developing concepts of sampling. *Journal for Research in Mathematics Education*, 31(1), 44-70.

This author analyzed open-ended interviews and written responses from 62 students in grades 3, 6, and 9 to a questionnaire to understand the characteristics of students' constructions of the concept of sample.

Stat, (K-12)

Watson, Jane M.; Moritz, Jonathan B. (2000). The longitudinal development of understanding of average. *Mathematical Thinking and Learning*, 2(1-2), 11-50.

The authors, through the use of interviews, explore grade 3 through 9 students' concept of the topic of average. The authors observed six levels of response based on a hierarchical cognitive functioning model.

Lrng, Stat, PS (K-12)

Zan, Rosetta. (2000). A metacognitive intervention in mathematics at university level. *International Journal of Mathematical Education in Science and Technology*, 31(1), 143-150.

This study reports results of instruction aimed at improving mathematics performance of a group of university biology students who repeatedly failed a required mathematics course. In this study, with proper intervention, all students proved successful.

Ach, Mteg, Tchg (PS)

Zwaneveld, Bert. (2000). Structuring mathematical knowledge and skills by means of knowledge graphs. *International Journal of Mathematical Education in Science and Technology*, 31(3), 393-414.

The study discusses use of knowledge graphs as a tool to visualize the structure and relations between mathematical concepts by analyzing student created graphs and the relationship between their graphs and test results.

Knw, Alg, Geom (SE)

Journals cited

Australian Primary Mathematics Classroom
Educational Studies in Mathematics
For the Learning of Mathematics
International Journal of Computers for Mathematical Learning
International Journal of Mathematical Education in Science and Technology
Journal for Research in Mathematics Education
Journal of Mathematics Teacher Education
Journal of Science Education and Technology
Mathematical Thinking and Learning
Mathematics Education Research Journal
Mathematics Educator
Mathematics Teaching in the Middle School
Ohio Journal of School Mathematics
School Science and Mathematics
Teaching Children Mathematics

Research Papers and Monographs in Mathematics Education Produced in 2000

Michelle K. Reed, *Wright State University*
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This section lists 61 papers and monographs in mathematics education research that were included in the ERIC database in 2000. Each entry is coded (see *Key to Codes*) with one to three major topic codes (in bold type) and any number of minor topic codes, as well as the grade level code (in parentheses). Studies related to preservice or inservice teacher education are indicated by the appropriate codes (Prsv, Insv). The level designated for teacher education or teacher studies indicates the grade level(s) at which the intern or teacher participants teaches, followed by the level code, "T" for teacher or "TE" for teacher education. All entries are indexed by major codes at the end of the volume (see page 69).

bouchedid, Kamal; Nasser, Ramzi. (2000). The role of presentation and response format in understanding, preconceptions and alternative concepts in algebra problems. [SE063179]

Sixteen algebra problems were constructed and administered among college and secondary school students. Based on the reading of the literature and analysis of responses, reversal and qualitative errors were identified. The causes and types of errors were identified as being either pedagogical (formal) or intuitive.

Alg, Mscn (SE, PS)

Adams, Kurt; Brower, Sharon; Hill, Denise; Marshall, Irma. (2000). *The components of an effective mathematics and science middle school: Standards, teaching practices, and professional development.* [SE064487]

The purpose of this study was to identify current educational reform issues that would increase student achievement in mathematics and science. The 100 selected schools yielded approximately a sample population of 350 teachers. The study found that professional development must incorporate the following initiatives to secure effectiveness. Teachers must be the key to student learning. Teachers must develop further expertise in content areas. Development should focus on implementing effective teaching methodologies. Teachers should have the opportunity to develop and plan collaboratively. Finally, professional development should be sustained, ongoing, intensive, and fully supported by the administration.

Insv, Tchg, TBIf , (MS, T)

An, Shuhua. (2000). *Mathematics teachers' belief and their impact on the practice of teaching in China.* [SE063810]

The purpose of this study was to find the beliefs of Chinese teachers in mathematics education and their impact on the practice of teaching. It indicates that teachers' beliefs of mathematics and its teaching play a significant role in shaping the teachers' ways of instruction and cultural and social contexts affect teachers' belief system.

Ethn, TBIf , Tchg (T)

An, Shuhua. (2000). *A comparative study of middle school mathematics programs in china and the U.S.* [SE063811]

The objectives of the study were to compare how mathematics is presented in the curricula and textbooks and to compare how mathematics is taught in classrooms in both China and the United States. It concludes that there are problems in mathematics education in both China and in the United States. China needs to find a way to reduce the high pressure from the exam-driven system to develop multiple teaching strategies and to apply new technology in teaching and learning mathematics. The United States looks for new approaches to improve on its weakness regarding the lack of strong basic conceptual understanding and skills.

CC, Curr, Tchg , (MS)

Bana, Jack, Ed.; Chapman, Anne, Ed. (2000). *Mathematics education beyond 2000: Proceedings of the 23rd annual meeting of the Mathematics Education Research group of Australasia (Fremantle, Western Australia, July 5-9, 2000). Volumes 1 And 2.* Mathematics Education Research Group of Australasia: Australia. [SE064097]

This document presents the first volume of the proceedings of the twenty-third annual conference of the Mathematics Education Research Group of Australasia Incorporated held at Fermantle, Western Australia, 5-9 July, 2000.

Tchg, Curr, Rsch , (K-12, PS)

Bay, Jennifer M. (2000). *The dynamics of implementing and sustaining standards-based mathematics curricula in middle schools*. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 24-28, 2000). [SE063561]

This study of district-level and teacher-level considerations in the implementation of standards-based middle school mathematics curriculum concludes that the existence of a standards-based text supports teachers that want to and know how to implement standards-based practices, facilitating their efforts to change their teaching. The texts alone, however, do not result in different teaching, capable of being adapted to more traditional practices.

Curr, Tchg , (MS)

Bernero, Jacqueline. (2000). *Motivating students in math using cooperative learning*. [SE064304]

A second grade class of twenty-five Black and Hispanic students worked in a cooperative learning environment for math. Each group completed reflections on how they worked together as a team and what they could do to improve. Groups took part in evaluating their work both collectively and individually. Results indicated that the use of cooperative learning did generate more interest in math and made it more enjoyable for both students and teacher.

Grpg, Ethn, Comm , (EL)

Brown, Frank. (2000). *Computer assisted instruction in mathematics can improve students' test scores: A study*. [SE063838]

This research assessed the academic impact of a computer-assisted instructional (CAI) software program to teach mathematics. It concludes that students should benefit from the use of a CAI software program as a supplement to regular classroom instruction in basic mathematics and algebra. African-American students seem to benefit the most.

CAI, Ethn, Ach , (HS)

Caniglia, Joanne; Duranczyk, Irene Mary. (2000). *Understanding mathematics backwards: A qualitative analysis of students' mathematical beliefs through autobiographies*. [SE063592]

The purpose of this study was to reveal common themes emerging from developmental mathematics students' autobiographies. The data gathered from (n=96) participants' narratives provided a lens for viewing students' beliefs about mathematics, particular content area weaknesses; external and internal influences; attribution of success and failure; gender issues; and metacognitive skills.

Blf, Knw , Gend (PS)

Capraro, Mary Margaret; Capraro, Robert M.; Wiggins, Bettie Barrett. (2000). *An investigation of the effects of gender, socioeconomic status, race, and grades on standardized test scores*. Paper presented at the Annual Meeting of the Southwest Educational Research Association (Dallas, TX, January 28, 2000). [SE064083]

The main objective of this study was to show whether eighth graders' performance on standardized mathematics tests could be predicted from a variety of variables. A random sample of 180 students consisting of 30 Black males, 30 Black females, 30 White males, 30 White females, 30 Hispanic males, and 30 Hispanic females were selected from the data set. Females were no less likely to score well on mathematics standardized test scores than were their male counterparts. However, there were differences between racial groups. The effects of socioeconomic status varied among groups but were found to be consistently significant across racial lines.

Ach, Gend, Ethn , (MS)

Carter, Carolyn M.; Smith, Lyle R. (2000). *Does the use of learning logic in algebra I make a difference in algebra II?* [SE064085]

The purpose of this study was to determine if the use of Learning Logic, an integrated-learning system, by high school students in Algebra I had a significant effect on the performance of these students when they subsequently enrolled in a traditionally-taught Algebra II course. Four high schools were selected in which Learning Logic was used for some Algebra I sections and in which other sections of Algebra I were taught without the use of Learning Logic. Results of the

analysis of Algebra II grades of these students revealed no significant differences between students who used Learning Logic in Algebra I and students who did not use Learning Logic in Algebra I. Teachers who used Learning Logic noted some benefits in terms of attitudes of students.

Alg, Curr , (HS)

Cavanagh, Michael; Mitchelmore, Michael. (2000). *Graphics calculators in mathematics learning: Studies of student and teacher understanding*. Proceedings of the International Conference on Technology in Mathematics Education, p112-19. [SE064632]

This study examined how students and teachers interpret the graphical images produced on the screen of a graphics calculator. Clinical interviews were conducted with 25 Year 10 and Year 11 students as they used graphics calculators to study linear and parabolic graphs. 12 teachers were observed as they did more complex tasks at a workshop. Students had a poor understanding of scale and the decimal coordinates given when tracing, and often failed to recognize when the viewing window displayed an incomplete graph of a junction. Both students and teachers showed very poor understanding of the procedures used by a graphics calculator to calculate and display the graph of a function.

GCal, Alg, Vis , (SE)

Cavanagh, Michael; Mitchelmore, Michael. (2000). *Students' technical difficulties in operating a graphics calculator*. Paper presented at the Annual Meeting of the Mathematics Education Research Group of Australasia (23rd, Fremantle, Australia, 2000). [SE064636]

This paper reports on how students deal with some technical aspects of the operation of a graphics calculator. Clinical interviews were conducted with 25 Year 10-11 students as they used graphics calculators to study graphs of straight lines and parabolas. Three common student difficulties were identified: a tendency to be unduly influenced by the jagged appearance of graphs; a poor understanding of the zoom operation of the graphics calculator; and a limited grasp of the processes used by the calculator to display graphs.

Alg, GCal , (HS)

Czajkowski, Katrine Jacobson. (2000). *Central tensions: A critical framework for examining high school mathematics and mathematics education*. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April, 2000). [SE063815]

This study uses a variety of statistical and ethnographic techniques to illustrate ways in which traditional high school mathematics education supports hegemony and maintenance of the status quo. The more math students take, the more they resist the subject and the less it appears useful in everyday life. Tracking students into college-prep and non-college-prep courses of study continues to fundamentally limit student opportunity.

Alg, Ach , (HS)

Fennema, Elizabeth. (2000). *Gender equity for mathematics and science*. [SE064217]

This paper discusses the research on mathematics and gender and the need to continue research that documents the status of gender differences as they exist. It focuses on the gender differences in mathematics. It also states that research must be supplemented with new types of scholarship focused on new questions and carried out with new methodologies that will help in the identification of important emphases for further new research; it will also ensure that women's voices will become a major part of all educational scholarship.

Revw, Gend , (K-12, PS)

Fernandez, Maria L., Ed. (2000). *Proceedings of the 22nd annual meeting of The North American Chapter of The International Group for the Psychology of Mathematics Education (Tucson, AZ, October 7-10, 2000). Volume 1-2*. [SE064088]

This document provides proceedings of the twenty-second annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education held on October 7-10, 2000, in Tucson, Arizona.

Rsch, Curr, Tchg , (K-12, PS)

Fraenkel, Jack, Ed.; Langbort, Carol, Ed.; Curtis, Deborah, Ed. (2000). *College of education review volume II. Special issue: Mathematics education*. San Francisco State University, College of Education: San Francisco, CA . [SE063846]

The focus of this special issue of the College of Education Review, the official journal of the College of Education at San Francisco State University, is Mathematics Education. All of the articles were written by graduates of new Masters Degree program, in which students earn a Master of Arts degree in Education with a Concentration in Mathematics Education.

Rsch, Curr, Tchg , (K-12)

Gomez, Cristina. (2000). *Examining relationships between students' solution strategies, algebraic reasoning, and achievement*. Paper presented at the Annual Meeting of the American Educational Research Association (81st, New Orleans, LA, April 24-28, 2000). [SE063938]

This paper presents the results from a paper-and-pencil instrument designed to elicit students' thinking about the rate of change in particular situations. The results from this scoring system were compared with students' performance on the initial instrument and with students' performance on a different test. Later, the same instrument was given to another group of students and their responses were scored using the same system. The results from both groups were compared in an attempt to understand the relevance of the scores and the value of the implications of the scores' interpretation.

Alg, Ach , (HS)

Goodell, Joanne E.; Parker, Lesley H.; Kahle, Jane Butler. (2000). *Facilitators and barriers to achieving equity and reform in middle-school mathematics*. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April, 2000). [SE064149]

The purpose of the study described in this paper was to determine the facilitators and barriers teachers in middle-school mathematics classrooms faced when trying to implement equity and reform objectives. The study is set in the context of the Statewide Systemic Initiative (SSI) in Ohio known as Project Discovery. In 1995, a major evaluation of the SSI, known as The Landscape Study, was begun. Both quantitative and qualitative data were collected from a wide range of sources across the state. This study focuses on the qualitative data collected at seven middle-school sites visited over a twelve-month period.

Eqty, Curr , (MS, T)

Grouws, Douglas A.; Cebulla, Kristin J. (2000). *Improving student achievement in mathematics*. [SE064144]

This booklet summarizes the mathematics chapter from the Handbook of Research on Improving Student Achievement, second edition, published by the Educational Research Service. The practices identified in this booklet reflect a mixture of emerging strategies and practices in long-term use. The authors briefly summarize the research supporting each practice, describe how this research might be applied in actual classroom practice, and list the most important studies that support the practice.

Revw, Ach , (K-12)

Hammrich, Penny; Richardson, Greer M.; Livingston, Beverly. (2000). *The Sisters in Science Program: Building girls interest and achievement in science and mathematics*. Paper presented at the Annual Meeting of the National Association of Research in Science Teaching (New Orleans, LA, April, 2000). [SE063657]

This paper reports on how (n=577) fourth grade girls in year one of the Sisters in Science Program changed their interest and achievement in science and mathematics and on (n=627) fourth and fifth grade girls in year two of the program changed their interest and achievement in science and mathematics. Findings show that the girls started the program with positive attitudes and perceptions of science and about science career possibilities. The girls did significantly increase their science and mathematics skill levels after having participated in the program in both years one and two.

Gend, Knw, Att , (EL)

Hassan, Ibrahim; Mohamed, Khadeeja; Mitchelmore, Michael. (2000). *Understanding of functions among Maldivian teacher education students*. Paper presented at the Annual Meeting of the Mathematics Education Research Group of Australasia (23rd, Fremantle, Australia, 2000). [SE064635]

Maldivian teacher education students' understanding of functions and rates of change was investigated. The written responses of 22 students to 10 examination questions were first analyzed, and then 5 students were interviewed in depth. It was found that students had a good grasp of basic concepts, but tended to rely on remembered formulae or procedures. They also had difficulty visualizing tangents and linking them to rates of change and derivatives.

TKnw, Alg, Vis , (PS, T)

BEST COPY AVAILABLE

Haug, Carolyn A. (2000). *Local capacity and state policies in Colorado: Obstacles to standards-based mathematics education reform.* Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 24-28, 2000). [SE063539]

This study was an investigation of the response of four school districts to standards-based education (SBE) policy instruments. The author suggests that states and districts will need to provide more opportunities for teachers to understand NCTM's vision of SBE reform, additional time and quality professional development, and assistance to alleviate other pressing problems.

Curr, Tchr, TKnw (K-12)

High, Robert V. (2000). *Mathematical anxiety among business statistics students.* New York. [SE063162]

An anxiety survey of (n=102) college students enrolled in statistics courses indicated that there was a relationship between the mathematics grade in prior mathematics courses and the expected grade in business statistics.

Stat, Anx , Ach (PS)

Horn, Laura; Bobbitt, Larry. (2000). *Mapping the road to college: First generation students' math track, planning strategies, and context of support.* National Center for Education Statistics: Washington, DC. [SE063196]

The report examines the effectiveness of taking algebra in 8th grade and advanced mathematics courses in high school in getting to college, and planning strategies students used to prepare for college. First-generation students were less than their peers to participate in academic programs leading to college enrollment, but students completing programs beyond algebra 2 increased their college enrollment.

Alg, Plan (SE, PS)

Jackson, Louise. (2000). *Increasing critical thinking skills to improve problem-solving ability in mathematics.* [SE064300]

This report investigated to what extent a curriculum designed to actively teach critical thinking skills resulted in students utilizing higher-order thinking skills (e.g., analysis, synthesis and evaluation). An intervention strategy was designed for a sixth grade class located in a diverse suburban community. The intervention targeted the mathematics curriculum and was designed to incorporate the teaching of critical thinking skills. Students displayed increased self-esteem and confidence in their abilities to problem-solve. Students were able to verbalize their thought processes in analyzing problems.

PS, Curr , (MS)

Ju, Mi-Kyung. (2000). *Communicative routines in mathematics class.* Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April, 2000). [SE063957]

This study reports on the ethnographic research of communication at a university mathematics department and is a case study of a mathematics professor who had taught mathematics for about 30 years at the university. It identified a routine shared among mathematicians to communicate a mathematical idea, or stated differently, a shared communicative routine for a social construction of a mathematical fact.

Comm , (PS, T)

Keijzer, Ronald; Terwel, Jan. (2000). *Learning for mathematical insight: A longitudinal comparison of two Dutch curricula on fractions.* Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 24-28, 2000). [SE063538]

Twenty primary school students participated in the comparison of an experimental program, which provided opportunities to develop number sense in a program where class discussion and the number line took a central place, and a controlled program using the circle as a model. Students from the experimental group demonstrated more aspects of number sense in processing fractions.

Frac, Curr, NSns (EL)

Lin, Pi-Jen. (2000). *Professional development for elementary mathematics teachers in Taiwan.* Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 24-28, 2000). [SE063559]

This paper offers a brief description of the Taiwanese elementary school system. The sharing of beliefs and experiences among teachers on a collaborative team serves teaching practice and supports change in teachers' beliefs

and conceptualizing of mathematics teaching and learning.

Insv, TBlf, Tchg , (EL, T)

Lukens, Jeffrey D.; Feinstein, Sheryl. (2000). *Raise test scores: Integrate biology and calculus*. [SE064146]

This paper presents the results of research that compares the academic achievement of high school students who enrolled in integrated Advanced Placement Biology/Advanced Placement Calculus course with students who enrolled in traditional Advanced Placement Biology and Advanced Placement Calculus courses. This study involves high school students (n=1780) from a Midwestern suburban high school.

IC, Calc , (HS)

Lukens, Jeffrey D.; Feinstein, Sheryl. (2000). *Graphing calculators' impact on AP biology*. [SE064233]

The central premise of this study was that the use of graphing calculator technology helped improve students' achievement in upper level biology courses. The population was high school students in a block course entitled "AP Biology/ AP Calculus" and students in a traditional AP Biology course. There appears to be a positive effect on student understanding and achievement on standardized exams when the graphing calculator is regularly used in an integrated science/math course.

IC, Calc, GCal , (HS)

Mack, Nancy K. (2000). *Long-term effects of building on informal knowledge in a complex content domain: The case of multiplication of fractions*. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April, 2000). [SE063813]

Four students participated in a two-year study (fifth- and sixth-grade) focused on the development of their understanding of multiplication of fractions. In the long term, all students consistently drew on their informal knowledge of partitioning on their own to solve problems. However, students' thinking was also dominated by their knowledge of algorithmic procedures at times.

Frac , (MS)

McGinnis, J. Randy; Parker, Carolyn. (2000). *What happens to first year teachers prepared to make connections between science and mathematics when they enter the workplace?* Paper presented at the Annual Meeting of the National Association for Research in Science Teaching (New Orleans, LA, April 28-May 1, 2000). [SE063816]

This study's purpose was to present a detailed description and an interpretation of what happens to first year new teachers who are prepared to make connections between science and mathematics and to teach in a manner consistent with the recommendations in the national science education reform movement. The focus was on two sets of participants: 1) all new graduates (N=57) from the Maryland Collaborative for Teacher Preparation [MCTP], a statewide reform-based undergraduate teacher preparation program supported by National Science Foundation funding, and 2) a select sample of first year new graduates of the program in the workplace (elementary and middle level schools) (N=5). The new teachers from such a teacher preparation program have the capabilities and intentions to teach mathematics and science in a reform-based manner that makes connections between the disciplines by using high quality science mathematics. However, the new teachers' school cultures was a major factor in whether reform-aligned mathematics and science teaching was implemented regularly by the new teachers and if the new teachers continued to teach in those schools.

IC, Tchg , (MS, EL)

McGinnis, J. Randy; Parker, Carolyn; Graeber, Anna O. (2000). *An examination of the enculturation of five reform-prepared new specialist teachers of mathematics and science*. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 24-28, 2000). [SE063817]

This study's purpose was to present a detailed description and interpretation of what happens to new teachers in schools who are prepared to enact reform-based practices in mathematics and science. The focus was on a select sample of graduates from a statewide reform-based undergraduate teacher preparation program. A case study methodology was used (first

year, N=5; second year, N=3). A major finding was that the new teachers' school cultures was a major factor in whether reform-aligned mathematics and science teaching was regularly implemented by the new teachers. In addition, the new teachers' perception of their school cultures' lack of support of their intent to implement reform-based practices prompted differing social strategies by the new teachers (resistance, moving on, and exit).

TAtt, Tchg , (T, EL, MS)

Merenluoto, Kaarina; Lehtinen, Erno. (2000). *Do theories of conceptual change explain the difficulties of enlarging the number concept in mathematics learning?* Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 24-28, 2000). [SE063544]

Professors of mathematics (n=10), interviewed about the personal learning histories, and (n=640) calculus students participated in a test of problems in rational/real numbers. Understanding the notion of real numbers was revealed to be so unique that a new kind of abstract thinking was required.

Lrng, NSns (SE, PS)

Mewborn, Denise S. (2000). *An analysis of the research on K-8 teachers' mathematical knowledge*. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 28, 2000). [SE063814]

This paper provides a summary and critique of the empirical literature on elementary teachers' mathematical knowledge. It concludes that there is no clearly definable body of knowledge that informs teaching. Rather teachers need multiple types of knowledge, each of which is rather ill defined and amorphous.

TKnw, Revw , (EL, MS)

Mewborn, Denise S. (2000). *Changing actions vs. changing beliefs: What is the goal of mathematics teacher education?* Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April, 2000). [SE063818]

This study focuses on one preservice mathematics teacher in her first mathematics methods course who constituted a special section of the course. This was field based with most of the course spent in a fourth grade classroom observing mathematics instruction, conducting task-based interviews with individual children, and teaching small groups. It concludes that the teacher was able to change her mathematics teaching behavior to be more consistent with her beliefs about children, teaching, and learning.

TBlf, Prsv , (EL, T)

Pang, JeongSuk. (2000). *Implementing student-centered instruction in Korean and the U.S. elementary mathematics classrooms*. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 24-28, 2000). [SE063555]

This study compared and contrasted the classroom social norms of two Korean and two U.S. second grade teachers who aspired to implement reform. The similarities and differences between the two teaching practices within a country clearly show that students' learning opportunities do not arise from general social norms of a classroom but its sociomathematical norms. This study also supports the growing realization of the reform community that reforming mathematics teaching is a matter neither of changing the social structure of instruction nor of adding a few new techniques to an existing repertoire.

CC, Tchg , Comm (EL)

Pepin, Birgit; Haggarty, Linda. (2000). *Mathematics textbooks and their use in English, French and German classrooms: A way to understand teaching and learning cultures*. Paper presented at the Annual Meeting of the American Educational Research Association (81st, New Orleans, LA, April 24-28, 2000). [SE063939]

After a thorough review of the relevant literature in terms of textbook analysis and mathematics teachers' use of textbooks in school contexts, this paper reports on selected and early findings from a study of mathematics textbooks and their use in English, French and German mathematics classrooms at lower secondary level. The research reviewed in the literature section raises important questions about textbooks as representations of the curriculum and about their role as a link between curriculum and pedagogy.

Matl, Lang, CC , (K-12)

Pligge, Margaret A.; Kent, Laura B.; Spence, Mary S. (2000). *Examining teacher change within the context of mathematics curriculum reform: Views*

from middle school teachers. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April, 2000). [SE063959]

This article describes teacher change using the backdrop of a Standards based reform middle grades mathematics curriculum and direct quotes from 16 teachers and math support coordinators involved in the implementation over the last five years. The results of survey, interview, and classroom observation data illustrate that, for these selected teachers and support staff, both the design of the curriculum and the staff development workshops changed their perceptions of both what mathematics is as a subject and how mathematics should be taught.

TBlf, Curr , (T, MS)

Ramirez, Reynaldo, Jr.; Laurel, Elva G.; Rodriguez-Aguilar, Celvia. (2000). *"Como que no puedo!" Strategies for the recruitment and retention of Hispanic females into mathematics and science post-secondary programs and careers*. Paper presented at the Annual Meeting of the National Association for Research in Science Teaching (Boston, MA, March, 1999). [SE063741]

The paper summarizes the research literature dealing with female recruitment and retention in mathematics and science, discusses the results of interviews conducted with Mexican-American youth and their teachers, and describes the authors' experience with programs designed to recruit and retain minority and underrepresented groups into mathematics and science.

Revw, Gend, Ethn , (K-12, PS)

Ring, Rochelle; Pape, Stephen J.; Tittle, Carol Kehr. (2000). *Student attitudes in a reformed mathematics classroom*. Paper presented at the Annual Meeting of the Associaton of Mathematics Teacher Educators (Charlotte, NC., February 10-12, 2000). [SE063158]

Over three semesters, a modified Fennema-Sherman Mathematics Attitude Scales was used to survey students' writing samples and evaluations of teaching. The comparison of pre- and post-course attitude showed that students' attitudes were based on long-term interactions with the subject and mathematics teachers.

Att (PS)

Rodriguez, Beatriz T. Font. (2000). *An investigation into how a teacher uses a reform-oriented mathematics curriculum*. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 24-28, 2000). [SE063545]

This study examined a teacher's transition from traditional to reform-oriented pedagogy while participating in The Mathematics Teacher Development Project. A teacher education program related to a reform-oriented curriculum seems to provide teachers with learning opportunities promoting the transformation of traditional teaching, but their learning created conflicts between the reform-oriented understandings and the traditional ways.

Tchg, Insv (TE, EL)

Roti, Joan; Trahey, Carol; Zerafa, Susan. (2000). *Improving student achievement in solving mathematical word problems*. [SE064140]

This report describes a program for improving students' comprehension of the language in mathematical problems. The targeted population consists of 5th/6th multi-age grade students and multi-age learners with special needs at a middle school located outside a major city in a Midwestern community. Analysis of probable cause data reveals that students cannot solve mathematical problems due to a number of factors. Students' often have difficulty figuring out the relationship between the words and the symbols in mathematical problems.

Lang, Matl, Rep , (MS)

Seah, Wee Tiong; Bishop, Alan J. (2000). *Values in mathematics textbooks: A view through two Australasian regions*. Paper presented at the Annual Meeting of the American Educational Research Association (81st, New Orleans, LA, April 24-28, 2000). [SE063551]

This study examined mathematics textbooks in Singapore and Victoria, Australia. Mathematics educational values are viewed as being influenced by, and acting on, different socio-cultural levels of values. Data compiled from the content analysis exercise revealed an unbalanced portrayal for each of the eight selected pairs of complementary values.

CC, Curr, Soc (SE)

Seo, Daeryong. (2000). *The motivational construct in mathematics learning using structural equation modeling: The Korean elementary school math class*. Paper presented at the Head Start National Research Conference(Washington, DC, June 28-July 1, 2000). [SE064356]

This study was undertaken to understand a motivation model in the context of the Korean elementary school mathematics class. The sample consisted of 178 fourth graders (boys = 95; girls = 83) from two Korean elementary schools. This study showed that a goal mediational model could be modified and successfully applied to the context of the Korean elementary school math class. Students' learning goal orientation had the bigger influence on their learning strategies.

Att, Styl , (EL)

Shama, Gilli; Layman, John. (2000). *The role of representations in learning an interdisciplinary mathematics and physics university course*. Paper presented at the Research Conference in Collegiate Mathematics Education (Mt. Pleasant, MI, September 4-7, 1997). [SE063993]

The University of Maryland offers a physics course as part of the Maryland collaborative for teachers' preparation (MCTP) project. One of the course aims is to promote the learning of the concept of a function through the learning of physics. The students learn in small groups, through problem solving and with the aid of microcomputer-based laboratories. Students are asked to examine and find connections between experiments, stories, graphs, and algebraic representations. Analysis of observations of students' group work in the course reveals that students' understanding of experiments and stories lead to different translations to graphical and algebraic representations.

IC, PS, Grpg , (PS)

Shults, Patricia Ann. (2000). *Teaching first grade computation: A comparison of traditional instruction and computer enhanced instruction*. [SE063887]

A first grade teacher in a rural elementary in upper East Tennessee observed that her students needed a better way to improve their computation skills than those of traditional instructional methods. Sixteen first graders participated as the subjects for this study. These students were divided into a control group and a treatment group. During the nine-week experiment, both groups received traditional instruction covering addition and subtraction facts in a large group setting. In addition, the treatment group used Math Blaster" Jr. software for an hour each week to practice computation while the control group received an hour of traditional instruction to equalize the time on task. The teacher had observed that the treatment group subjects became disinterested in the Mathematics software in the latter part of the experiment. The teacher believes that this disinterest led to the lower mean score by the treatment group.

Comp, Att, Arth , (EL)

Spielman, Elizabeth; Mitchelmore, Michael. (2000). *Change in attitudes towards mathematics among Aboriginal adult learners*. Paper presented at the Annual Meeting of the Mathematics Education Research Group of Australasia (23rd, Fremantle, Australia, 2000). [SE064633]

This study investigated changes in adult Aboriginal students' attitudes during a yearlong mathematics unit taught by the researcher. Students completed an attitudinal survey before and after the unit and also kept regular diaries. Although attitudes fluctuated during the unit, the general trend was positive. Factors identified by the students as contributing to this change included the separation of students into ability groups, negotiation of content and learning style, relevance of content, and community visits by the teacher.

Ethn, Att, Styl , (PS)

Tapia, Martha; Marsh, George E. (2000). *Effect of gender, achievement in mathematics, and ethnicity on attitudes toward mathematics*. Paper presented at the Annual Meeting of the Mid-South Educational Research Association (Bowling Green, KY, November 15-17, 2000). [SE064546]

The effects of gender, math achievement and ethnicity on attitudes toward mathematics were examined by use of an inventory called Attitudes Toward Mathematics Instrument (ATMI). The inventory was completed by 545 students at a college preparatory bilingual school. Failing students were lowest on self-confidence, motivation, value, and enjoyment. There was an overall significant effect for ethnicity on three factors. Mexican students scored significantly higher than American students on self-confidence, value, and enjoyment.

Gend, Ethn, Att , Ach (SE)

Tapia, Martha; Marsh, George E. (2000). *Attitudes toward mathematics instrument: An investigation with middle school students*. Paper presented at the Annual Meeting of the Mid-South Educational Research

Association (Bowling Green, KY, November 15-17, 2000.). [SE064547]

The purposes of this study were to (a) develop a measure of students' attitudes toward mathematics, the Attitudes Toward Mathematics Inventory (ATMI) and to (b) find the underlying dimensions of the inventory by testing 262 middle school students at a bilingual college preparatory school. The Psychometric properties were sound and the ATMI can be recommended for use in the investigation of students' attitudes toward mathematics.

Att , (MS)

Telese, James A. (2000). *School algebra reform: Meeting the grade?* Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 24-28, 2000). [SE063560]

This paper reports on a case study to understand Algebra I teaching strategies, which was conducted at five high schools. Field observations revealed a teaching methodology that focused on skills and procedures facilitated through lecture and supervised practice. Students failed to complete open-ended, and higher order thinking questions on a standardized measure of algebraic skills.

Alg, Ethn, Assm

Turner, Erin E.; Wilhelm, Jennifer; Confrey, Jere. (2000). *Exploring rate of change through technology with elementary students*. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 24-28, 2000). [SE063546]

This study examined students (n=20) to investigate understanding of concepts related to rate of change using motion detectors and graphing calculators, and found that early introduction to rate of change concepts is valuable. Elementary students are clearly capable of thinking about and understanding concepts related to rate of change.

GCal, Alg (EL)

Van Eck, Richard. (2000). *The effect of advisement and competition on transfer, advisor use, and attitude toward mathematics using a computer-based simulation game*. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 24-28, 2000). [SE063537]

This study looked at the roles that competition and context of advisement have on transfer, advisor use, attitude toward mathematics, and attitude toward the instruction in a computer-based simulation game requiring the use of mathematics skills. Advisement seems to be a good way to promote transfer and positive attitude toward mathematics and the instruction.

Att, Comp (PS)

Weast, Jerry D. (2000). *Studies of mathematics instruction and curriculum: Implications for the future*. [SE064500]

The absence of a consistently implemented mathematics curriculum and the impact of ineffective teaching practices and instructional leadership in mathematics have a larger responsibility for underachievement by students in the Montgomery County Public Schools than previously realized. This conclusion is supported through three separate studies that found significant variability in classroom instruction, course content, and curriculum organization from school to school and within schools.

Curr, Tchg , (K-12)

Williams, Lynda Patterson. (2000). *The effect of drill and practice software on multiplication skills: "Multiplication Puzzles" versus "The Mad Minute"*. [SE063888]

The purpose of the study was to compare two methods of learning the multiplication facts to develop speed and accuracy. The researcher conducted the action research project with a seventh grade enrichment class, which met for seven weeks during the school year. As part of the curriculum students were provided with activities to refine their basic math skills. The results indicated that there was a significant increase in the number of problems correctly completed by the treatment group that used "Multiplication Puzzles" on the computer, whereas mean scores for the pencil and paper group did not indicate a significant improvement in the development of their multiplication skills.

Comp, Mult , (MS)

Woodbury, Sonia. (2000). *A model of the influence of teacher thinking and contexts on teacher change as conceptual change in mathematics education reform*. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April, 2000). [SE063956]

This paper presents a conceptual model that casts teacher's thinking and their practice at the heart of the mathematics education reform. It also collects data about each of the interrelated parts of the conceptual model and concerned four teachers from two high schools and their principals. The four teachers' case stories with descriptions of the one class that the researcher observed extensively for each teacher are described. It indicates that the teachers in this study had a strong sense of autonomy about their work. They were teaching in unique ways that they each considered being the best for their students.

TKnw, Tchg , (T, HS)

Yoder, Arnita J. (2000). *The relationship between graphing calculator use and teachers' beliefs about learning algebra*. Paper presented at the Annual Meeting of the Mid-Western Educational Research Association (Chicago, IL, October 25-28, 2000). [SE064246]

The purpose of this study was to determine 48 teachers' views of learning algebra and to investigate if any relationship exists between their views of learning algebra and the ways that they use graphing calculators in their algebra classes. When calculator use was examined in regard to the teachers' views of learning algebra and also to the teachers' background characteristics, workshop attendance was found to be an important factor in determining how the teachers use calculators.

TBlf, GCal , (T, SE)

Index

Every dissertation, journal article, paper, and monograph listed in the preceding three sections is indexed by one to three **Major** and any number of *Minor* topic codes. The 75 major codes have been clustered into 20 groups of related topics for the purpose of indexing. Only the **Major** codes are listed after each entry in the index.

Achievement (Ach)

Dissertations

Ai — Ach, Att, Gend
Alford — Alg, Tchg, Ach
Ballon — Ach, Curr, Soc
Barbato — Grpg, Ach, Att
Barlow — Ach, Att, CAI
Bejarano — Tatt, Ethn, Ach
Bluette — Insv, Tchg, Ach
Brogan — CAI, Ach, Att
Brown — Att, Ach, D/R
Cole — Ach, Curr
Collie-Patterson — Ach, Tchr, Att
Decker — Ach
D'Souza — Insv, Ach
Eisele — Anx, Ach, Styl
Erickson — LD, Ach
Fortner — Gend, Ach
Freshcorn — Soc, Ach
Gales — TBlf, Tchg, Ach
Gasiorowski — CAI, Styl, Ach
Gerber — Ach, Tchg, TAtt
Giuliano — Assm, Ach
Goycochea — Assm, Eqty, Ach
Higginbotham — Curr, Ach, PS,
Johnson — Ach, Clln, LD
Johnson — Gend, Ach, Att,
Kawanaka — Tchg, CC, Ach
Lenz — Ethn, Soc, Ach
McKenzie — Curr, Comp, Ach
Ortiz — Soc, Lrnr, Ach
Owens — Ach, Styl, Att
Powers — Soc, Ach, Att
Rotigel — Ach, Gift
Sanders — Ach, Tchr
Tomoff — Assm, Ach, Tchg
Vaccaro — Ach
Washington — Gift, Ach, Soc
White — Tchg, Ach, Att
White — D/R, Att, Ach
Wood — Gift, Ach, Aff

Articles

Anthony — Ach, Att
Ho — CC, Anx, Ach
Sullivan — Assm, Ach
Zan — Ach, Mteg

Papers

Brown — CAI, Ethn, Ach
Capraro — Ach, Gend, Ethn
Czajkowski — Alg, Ach
Gomez — Alg, Ach
Grouws — Revw, Ach

Affect (Aff); Anxiety (student's) (Anx); Attitudes (student's) (Att); Beliefs (student's) (Blf)

Dissertations

Ahmadifar — Ethn, Att, Soc
Ai — Ach, Att, Gend
Barbato — Grpg, Ach, Att
Barger — Att, Blf, Tchg
Barlow — Ach, Att, CAI
Belloso — Aff, Stat
Brogan — CAI, Ach, Att
Brown — Att, Ach, D/R
Collie-Patterson — Ach, Tchr, Att
Conner — Gend, Att
Darby — Att, Blf, Comm
Dell'Isola — Manp, Anx, Att
Diamantis — Prsv, Att, Manp
Dodsworth — PS, Blf
Eisele — Anx, Ach, Styl
Eliaser — Blf, Prf
Ferdinand — Prsv, Att, Blf
Graham — Blf, Gend, Lrng
Harder — Gend, Anx, Eqty
Hart — Grpg, Calc, Att
Heckemeyer — Att, Tech
Henthorne — Att, Lrnr, Clln
Jacobson — TAtt, Att, Eqty
Kindel — Styl, Att
Kong — Ethn, Att, Clln
Kovarik — Curr, Anx
Krows — Prsv, Blf, Att
Lee — Stat, Lrnr, Att
Lucas — Grpg, Att, Gend
Madaus — D/R, Att, Matl
Mandell — Comp, Tech, Att
Miller — Anx, Alg
Oberer — Styl, Att
Owens — Ach, Styl, Att
Powers — Soc, Ach, Att
Ribble — Patt, Aff, Soc
Rodriguez — Assm, Tchg, Blf
Rowe — Alg, Gend, Att
Scott — Att, Gend, PS
Sloan — Prsv, Anx, Styl
Smith — Lrng, Att
Smith — Gend, Att, Arth
Stenger — Att, Styl, Blf
Thomas — Ethn, Gend, Att
Timmel — Gend, Att, Blf
Van Eck — Lrng, Att
Vincent — Gend, Att, Comm
Walker — Blf, Knw, Curr
Warneke — D/R, Anx
Werthessen — Geom, Vis, Att
White — D/R, Att, Ach
White — Tchg, Ach, Att
Wiken — Blf, Lrng, Gend
Wood — Gift, Ach, Aff
Zopp — Anx, Att

Articles

Anthony — Ach, Att
Forgasz — Tchg, Att
Ho — CC, Anx, Ach
Nicaise — Styl, Att
Stuart — Anx, Att
Szydlik — Calc, Blf

Papers

Caniglia — Blf, Knw
Hammrich — Gend, Knw, Att
High — Stat, Anx
Ring — Att
Seo — Att, Styl

Shults	Comp, Att, Arth
Spielman	Ethn, Att, Styl
Tapia	Att
Tapia	Gend, Ethn, Att
Van Eck	Att, Comp

Algebra, pre-algebra (Alg); Calculus, precalculus (Calc); Post Calculus (AdvM)

Dissertations

Alford	Alg, Tchg, Ach
Alsawaie	CAI, AdvM, Styl
Armstrong	Alg, D/R, Assm
Biagetti	Insv, Alg, Comm
Boats	CAI, Matl, AdvM
Brien	Alg, D/R
Burns	Calc, GCal, TAtt
Cates	Alg, M/CBL, Calc
Cottrill	Calc, Lrng
Davila Hernandez	Calc, Lrng, Grpg
Dimiceli	Gcal, Calc, Rep
Durmus	GCal, Lrng, Alg
Givens	Alg, D/R
Gningue	Manp, Lrng, Alg
Hamtini	CAI, Alg
Hart	Grpg, Calc, Att
Hayakawa	CC, Tech, Alg
Hebert	Patt, Alg, Geom
Hsieh	Arth, Alg, Lrng
Isaacson	Calc, Gend, Vis
Ittigson	Tchg, Alg
Jones	LD, Alg
Kermani	Calc, Tchg
Kloster	Alg, Lrng, Rep
Krakowski	GCal, Calc
Li	CC, Matl, Alg
Makanong	Lrng, Alg, PS
McCarthy	Calc, Lrng
Miller	Lrng, Calc, Tchg
Miller	Anx, Alg
Pinon	Alg, Manp, Rep
Pullano	Mscn, Gcal, Alg
Pustejovsky	Calc
Rowe	Alg, Gend, Att
Seaman	Vis, Gcal, Calc
Selzer	Lrng, Alg, Rep
Shipley	Prf, AdvM
Wyeth	Calc, Alg, Rep
Yuan	Styl, Clln, Alg

Articles

Baker	Calc, Mscn
Healy	Prf, Alg
Huntley	Curr, Alg
Nathan	Alg, Tchr, Mscn
Swafford	Alg, PS
Szydlik	Calc, Blf
Zwaneveld	Knw, Alg

Papers

Abouchedid	Alg, Mscn
Carter	Alg, Curr
Cavanagh	Alg, GCal
Cavanagh	GCal, Alg, Vis
Czajkowski	Alg, Ach
Gomez	Alg, Ach
Hassan	TKnw, Alg, Vis
Horn	Alg, Plan
Lukens	IC, Calc
Lukens	IC, Calc, GCal
Telese	Alg, Ethn, Assm
Turner	GCal, Alg

Anxiety (teacher's) (TAnx); Attitudes (teacher's) (TAtt); Beliefs (teacher's) (TBlf); Content knowledge, pedagogical knowledge (teacher's) (TKnw); Teachers (characteristics of) (Tchr)

Dissertations

Arp	Prsv, TAtt
Bejarano	Tatt, Ethn, Ach
Berger	Insv, TAtt, Tchg
Beyers	Curr, TAtt
Bohn	TAtt, TBlf, Eqty
Bote	TBlf, Tatt, Prsv
Buckreis	TKnw, Tchg, M/D
Burns	Calc, GCal, TAtt
Cho	TBlf, Tchg
Coffey	Assm, TBlf
Collie-Patterson	Ach, Tchr, Att
Collopy	Curr, TBlf, TKnw
Craig	Prsv, PS, TAtt
Crockett	TAtt, Insv, TKnw
DeMille	TAnx, TKnw
Duah-Agyeman	Insv, TKnw, Tchr
Eisenhardt	Insv, Curr, TKnw
Folk	TBlf, TKnw, Tchr
Gales	TBlf, Tchg, Ach
Gann	Prsv, TBlf, Tchg
Garcelon	Lrng, TKnw
Geist	Curr, TKnw, Insv
Gerber	Ach, Tchg, TAtt
Gray	TAtt, Soc, Ethn
Harnish	Insv, Prsv, TKnw
Herring	GCal, TBlf
Hervey	TBlf, Curr
Jacobson	TAtt, Att, Eqty
Jakabcsin	TAtt, Curr
Knuth	Prf, TKnw, TBlf
Kupari	TBlf
Lacefield	Tatt, Tchg
Lingefjard	Tech, Rep, TKnw
Liptak	Insv, TKnw, TBlf
Ma	Curr, TBlf, TAtt
McAdam	Prsv, TKnw, Manp
Miller	Prsv, TBlf, TKnw,
Pitsch	Gend, Tchr, Tchg
Powell	Ethn, Tchr, Tchg
Priselac	TAtt, Insv, Curr
Sanders	Ach, Tchr
Siebert	Prsv, Tknw, TBlf
Skinner	Clln, TAtt, TBlf
Smith	TBlf, Assm
Smith	Prsv, TKnw, IC
Stone	Frac, Prsv, TKnw
Thomas	Prsv, TKnw
Woodbury	TBlf, Curr

Articles

Ebby	TKnw, Prsv
Nathan	Alg, Tchr, Mscn
Tirosh	TKnw, Prsv
Walen	TBlf, Curr

Papers

Adams	Insv, Tchg, TBlf
An	Ethn, TBlf
Hassan	TKnw, Alg, Vis
Haug	Curr, Tchr, TKnw
Lin	Insv, TBlf, Tchg
McGinnis	TAtt, Tchg
Mewborn	TKnw, Revw
Mewborn	TBlf, Prsv
Pligge	TBlf, Curr
Woodbury	TKnw, Tchg
Yoder	TBlf, GCal

Arithmetic (Arth); Addition, subtraction (A/S); Decimals (Decm); Equivalence, proportion (Eqv); Estimation (Est); Fractions, rational numbers (Frac); Integers (Int); Multiplication, division (M/D); Number sense (NSns); Place Value (PlcV); Ratio, proportion, percent (RaPc); Whole numbers (Whol)

Dissertations

Biddlecomb	Lrng, Frac, Whol
Buckreis	TKnw, Tchg, M/D
Butler	LD, Frac, Rep
Chung	Lrng, M/D, Patt
Emfinger	M/D, Lrng, PS
Fornof	LD, Lrng, Arth
Haverty	PS, Arth, Knw
Hsieh	Arth, Alg, Lrng
Liberant	M/D, PS, Grpg
Logan	M/D
McCall	Lrng, LD, Arth
Mintz	CAI, Arth, PS
Moss	Frac, RaPc, Lrng
Park	NSns, CC, Lrng
Reed	PlcV, Curr, Lrng
Robinson	A/S, Oral, Lrng
Rowell	M/D, D/R, Knw
Roy	NSns, LD, A/S
Roy	NSns, LD, A/S
Runesson	Frac, RaPC
Shih	Frac, Lrng
Smith	Gend, Att, Arth
Steck	Lrng, LD, NSns
Stone	Frac, Prsv, TKnw
Thrun	Frac
Toluk	Frac

Articles

Fuson	Curr, Arth
Hanson	Est, Frac
Lee	Curr, Arth
Li	Arth, CC, Curr

Papers

Keijzer	Frac, Curr, NSns
Mack	Frac
Merenluoto	Lrng, NSns
Shults	Comp, Att, Arth

Assessment, evaluation (Assm)

Dissertations

Armstrong	Alg, D/R, Assm
Browning	Eqty, Gend, Assm
Calhoon	LD, Assm
Cicmanec	Assm, Tchg
Coffey	Assm, TBlf
Cronin	Assm, D/R
Fierros	Gend, Assm, PS
Giuliano	Assm, Ach
Goycochea	Assm, Eqty, Ach
Haarer	Comp, Mtcg, Assm
Hutson	Assm, D/R
Newbill	Curr, Assm
Petway	Assm, Curr
Ridge	Assm, Rsch
Rizor	Assm, Curr, Tchg
Rodriguez	Assm, Tchg, Blf
Smith	TBlf, Assm
Suurtamm	Assm, Curr
Thurber	Assm, Lrng
Tomoff	Assm, Ach, Tchg
Vogler	Curr, Assm, Tchg
Wellborn	Assm

Articles

Baranchik	Assm, Knw
Cox	Assm, Knw
Sullivan	Assm, Ach
Watson	Assm, Eqty

Paper

Telese	Alg, Ethn, Assm

Calculators (Calc); Computer-assisted instruction (CAI); Computers (general) (Comp); Graphing calculators (GCal); Microcomputer, microcalculator based labs (M/Cbl); Multimedia (MMed); Technology (general) (Tech)

Dissertations

Abramowitz	Stat, Comp
Alghazo	Tech, MMed, Comp
Alsawaie	CAI, AdvM, Styl
Barlow	Ach, Att, CAI
Barnet	M/Med, Stat, Tech
Bausch	CAI, Comp
Beaudrie	Comm, Comp, Soc
Bell	CAI, Rep, Vis
Boats	CAI, Matl, AdvM
Breen	CAI, Geom, Lrng
Breunlin	Geom, CAI
Brogan	CAI, Ach, Att
Burns	Calc, GCal, TAtt
Cates	Alg, M/CBL, Calc
Cerkovnik	Tchg, M/CBL
Coffland	Geom, Tech, CIIn
Creed	Comp, Stat, GCal,
Dimiceli	Gcal, Calc, Rep
Drier	Prob, Comp
Durmus	GCal, Lrng, Alg
Gasiorowski	CAI, Styl, Ach
Glickman	CAI, Knw
Haarer	Comp, Mtcg, Assm
Hamtini	CAI, Alg
Hayakawa	CC, Tech, Alg
Haynes	Gend, Comp, Att, Blf
Heckemeyer	Att, Tech
Herring	GCal, TBlf
Jeon	Curr, GCal, Tchg
Koehler	Prsv, MMed
Krakowski	GCal, Calc
Lawler	Lrng, Tchg, GCal
Lingefjard	Tech, Rep, TKnw
Mandell	Comp, Tech, Att
Matthee	Lrng, Tech, Grpg
McKenzie	Curr, Comp, Ach
Mintz	CAI, Arth, PS
Morrow	M/CBL, Comp
Myers	MMed, DscM
Pullano	Mscn, Gcal, Alg
Rho	Mscn, Grpg, CAI
Seaman	Vis, Gcal, Calc
Shaffer	Curr, Tech, Rep
Shavalier	Vis, CAI, Gend
Sinnemaki	Comp, M/D Aff
Spencer	Tech

Articles

Friel	Prsv, Tech
Ozgun-Koca	CAI, Rep
Povey	CC, Comp
Pratt	Prob, Comp
Tarr	Cltr, Curr, CC

Papers

Brown	CAI, Ethn, Ach
Cavanagh	GCal, Alg, Vis
Cavanagh	Alg, GCal
Lukens	IC, Calc, GCal
Shults	Comp, Att, Arth
Turner	GCal, Alg
Van Eck	Att, Comp
Williams	Comp, Mult
Yoder	TBlf, GCal

Grouping for instruction, cooperative learning (Grpg); Planning, decision making (Plan); Teaching (role, style, methods) (Tchg)

Dissertations

Alford	Alg, Tchg, Ach
Barbato	Grpg, Ach, Att
Barger	Att, Blf, Tchg
Bay	Curr, Insv, Plan
Berger	Insv, TAtt, Tchg
Bluette	Insv, Tchg, Ach
Buckreis	TKnw, Tchg, M/D
Cerkovnik	Tchg, M/CBL
Chizhik	Grpg, Gend, Ethn
Cho	TBlf, Tchg
Cicmanec	Assm, Tchg
Drew	Curr, Tchg, Geom
Gales	TBlf, Tchg, Ach
Gann	Prsv, TBlf, Tchg
Gerber	Ach, Tchg, TAtt
Hald	Plan, D/R
Hall	Lrng, Tchg, Rep
Hart	Grpg, Calc, Att
Holschen	Curr, Tchg, Lrng,
Ittigson	Tchg, Alg
Jeon	Curr, GCal, Tchg
Kawanaka	Tchg, CC, Ach
Kazemi	Insv, Knw, Tchg
Kermani	Calc, Tchg
Lacefield	Tatt, Tchg
Lawler	Lrng, Tchg, GCal
Liberant	M/D, PS, Grpg
Lucas	Grpg, Att, Gend
Manswell Butty	Curr, Ethn, Tchg
Matthee	Lrng, Tech, Grpg
Matthews	Curr, Tchg, Lrng
McGatha	Rsch, Plan
Miller	Lrng, Calc, Tchg
Moore	Tchg, Lrng, Styl
Novinger	Lrng, Tchg, Oral
Pitsch	Gend, Tchr, Tchg
Powell	Ethn, Tchr, Tchg
Pratt	Tchg, Curr
Rho	Mscn, Grpg, CAI
Rizor	Assm, Curr, Tchg
Rodriguez	Assm, Tchg, Blf
Ryan	Plan, Lrnr
Sakamoto	LD, Manp, Tchg
Shen	LD, Tchg
Tomoff	Assm, Ach, Tchg
Vogler	Curr, Assm, Tchg
White	Tchg, Ach, Att
Ziegler	Lrng, Tchg

Articles

Brodie	Tchg, Grpg
Forgasz	Tchg, Att
Johanning	Grpg, Writ, PS
Leach	Lang, Tchg
Pesek	Tchg

Papers

Adams	Insv, Tchg, TBlf
An	CC, Curr, Tchg
Bana	Tchg, Curr, Rsch
Bay	Curr, Tchg
Bernero	Grpg, Ethn, Comm
Fernandez	Rsch, Curr, Tchg
Fraenkel	Rsch, Curr, Tchg
Horn	Alg, Plan
Lin	Insv, TBlf, Tchg
McGinnis	IC, Tchg
McGinnis	TAtt, Tchg
Pang	CC, Tchg
Rodriguez	Tchg, Insv
Shama	IC, PS, Grpg
Weast	Curr, Tchg
Woodbury	TKnw, Tchg

Classroom interaction (CIIn); Communications (Comm); Oral communication, classroom discourse (Oral); Writing, journals (Writ)

Dissertations

Beaudrie	Comm, Comp, Soc
Biagetti	Insv, Alg, Comm
Carrillo	Ethn, Curr, Comm
Coffland	Geom, Tech, CIIn
Darby	Att, Blf, Comm
DeCesare	Ethn, Writ, Matl
Gordon Calvert	Comm, Oral
Henthorne	Att, Lrnr, CIIn
Hufferd-Ackles	Curr, Oral
Johnson	Ach, CIIn, LD
Jones	Curr, Lrng, CIIn
Kong	Ethn, Att, CIIn
Kysh	CIIn, Oral
Novinger	Lrng, Tchg, Oral
O'Connor	Oral, Comm, Lrng
Olkun	Manp, Lrng, Oral
Painter	Soc, Lrng, CIIn
Robinson	A/S, Oral, Lrng
Rodeheaver	Prsv, Comm
Singer	Writ, Oral
Skinner	CIIn, TAtt, TBlf
Vincent	Gend, Att, Comm
Willner	Geom, Lrng, Writ
Yuan	Styl, CIIn, Alg

Articles

Burton	Writ
Johanning	Grpg, Writ, PS
Sfard	Comm, Mtcg

Papers

Bernero	Grpg, Ethn, Comm
Ju	Comm

Cross-cultural (CC); Equity (Eqty); Ethnic, racial (Ethn); Social factors, context, parents (Soc)

Dissertations

Ahmadifar	Ethn, Att, Soc
Ballon	Ach, Curr, Soc
Beaudrie	Comm, Comp, Soc
Bejarano	Tatt, Ethn, Ach
Bohn	TAtt, TBlf, Eqty
Brown	Ethn, Eqty
Browning	Eqty, Gend, Assm

Carrillo	Ethn, Curr, Comm
Chan	Gend, Eqty, Soc
Chizhik	Grpg, Gend, Ethn
Cmajdalka	Ethn, D/R
Cuellar	PS, Ethn
DeCesare	Ethn, Writ, Matl
Fredricks	Soc, Gend
Freshcorn	Soc, Ach
Goycochea	Assm, Eqty, Ach
Gray	TAtt, Soc, Ethn
Harder	Gend, Anx, Eqty
Hayakawa	CC, Tech, Alg
Jacobson	TAtt, Att, Eqty
Kawanaka	Tchg, CC, Ach
Kong	Ethn, Att, Clln
Lenz	Ethn, Soc, Ach
Li	CC, Matl, Alg
Lucas	D/R, Soc
Manswell Butty	Curr, Ethn, Tchg
Ortiz	Soc, Lrnr, Ach
Painter	Soc, Lrng, Clln
Park	NSns, CC, Lrng
Powell	Ethn, Tchr, Tchg
Powers	Soc, Ach, Att
Ribble	Patt, Aff, Soc
Robichaux	Vis, Soc, Gend
Rosen	Curr, Soc
Smith	CC, PS
Thomas	Ethn, Gend, Att
Torres	Ethn, Lang
Washington	Gift, Ach, Soc

Articles

De Abreu	CC, PS
Ho	CC, Anx, Ach
Imai	Curr, CC
Krummheuer	Lrng, CC
Li	Arth, CC, Curr
Lubienski	PS, Eqty
Povey	CC, Comp
Tarr	Cltr, Curr, CC
Watson	Assm, Eqty

Papers

An	Ethn, TBlf
An	CC, Curr, Tchg
Bernero	Grpg, Ethn, Comm
Brown	CAI, Ethn, Ach
Capraro	Ach, Gend, Ethn
Goodell	Eqty, Curr
Pang	CC, Tchg
Pepin	Matl, Lang, CC
Ramirez	Revw, Gend, Ethn
Seah	CC, Curr, Soc
Spielman	Ethn, Att, Styl
Tapia	Gend, Ethn, Att
Telese	Alg, Ethn, Assm

Curriculum, programs (Curr); Diagnosis, remedial mathematics (D/R); Integrated curriculum (IC); Manipulatives (Manp); Materials (texts, other resources) (Matl)

Dissertations

Armstrong	Alg, D/R, Assm
Ballon	Ach, Curr, Soc
Bay	Curr, Insv, Plan
Beyers	Curr, TAtt
Boats	CAI, Matl, AdvM
Brien	Alg, D/R
Brown	Att, Ach, D/R
Carrillo	Ethn, Curr, Comm
Carvan	Curr, Comm., Insv
Chambers	Curr, Insv
Cmajdalka	Ethn, D/R
Cole	Ach, Curr
Collopy	Curr, TBlf, TKnw
Cronin	Assm, D/R
de Groot	Curr, Lrng, Styl
DeCesare	Ethn, Writ, Matl
Dell'Isola	Manp, Anx, Att
Diamantis	Prsv, Att, Manp
Drew	Curr, Tchg, Geom
Eisenhardt	Insv, Curr, TKnw
Geist	Curr, TKnw, Insv
Givens	Alg, D/R
Gningue	Manp, Lrng, Alg
Hald	Plan, D/R
Haug	Curr, Impl
Hervey	TBlf, Curr
Higginbotham	Curr, Ach, PS,
Holschen	Curr, Tchg, Lrng,
Hufferd-Ackles	Curr, Oral
Hutson	Assm, D/R
Jakabcsin	TAtt, Curr
Jeon	Curr, GCal, Tchg
Jones	Curr, Lrng, Clln
Kahan	Prf, Curr, Mscn
Kovarik	Curr, Anx
Li	CC, Matl, Alg
Lucas	D/R, Soc
Ma	Curr, TBlf, TAtt
Madaus	D/R, Att, Matl
Manswell Butty	Curr, Ethn, Tchg
Matthews	Curr, Tchg, Lrng
McAdam	Prsv, TKnw, Manp
McKenzie	Curr, Comp, Ach
Newbill	Curr, Assm
Nissen	Geom, Curr, Matl
Nissen	Geom, Curr, Matl
Ohana	Prsv, Curr
Olkun	Manp, Lrng, Oral
Petway	Assm, Curr
Pinon	Alg, Manp, Rep
Pratt	Tchg, Curr
Priselac	TAtt, Insv, Curr
Reed	PlcV, Curr, Lrng
Rizor	Assm, Curr, Tchg
Rosen	Curr, Soc
Rowell	M/D, D/R, Knw
Rudd	IC
Saam	IC, Plan
Sakamoto	LD, Manp, Tchg
Sassano	Prsv, Curr, Mtl,
Seo	Curr, Rep, PS
Shaffer	Curr, Tech, Rep
Smith	Prsv, TKnw, IC
Suurtamm	Assm, Curr
Thompson	Curr, Phil
Tripp	D/R, Mscn
Vogler	Curr, Assm, Tchg
Walker	Blf, Knw, Curr
Warneke	D/R, Anx
Westberry	Curr
White	D/R, Att, Ach
Woodbury	TBlf, Curr

Articles

Fuson	Curr, Arth
Grover	Geom, Curr
Huntley	Curr, Alg
Imai	Curr, CC
Lee	Curr, Arth
Li	Arth, CC, Curr
Outhred	Meas, Manp
Pang	Curr, Impl, IC
Pickreign	Curr, Geom
Ridlon	Curr, PS
Tarr	Cltr, Curr, CC
Walen	TBlf, Curr

Papers

An	CC, Curr, Tchg
Bana	Tchg, Curr, Rsch
Bay	Curr, Tchg
Carter	Alg, Curr
Fernandez	Rsch, Curr, Tchg
Fraenkel	Rsch, Curr, Tchg
Goodell	Eqty, Curr
Haug	Curr, Tchr, TKnw
Jackson	PS, Curr
Keijzer	Frac, Curr, NSns
Lukens	IC, Calc
Lukens	IC, Calc, GCal
McGinnis	IC, Tchg
Pepin	Matl, Lang, CC
Pligge	TBlf, Curr
Roti	Lang, Matl, Rep
Seah	CC, Curr, Soc
Shama	IC, PS, Grpg
Weast	Curr, Tchg

Discrete mathematics (DscM); Probability (Prob); Statistics (Stat)

Dissertations

Abramowitz	Stat, Comp
Barnet	M/Med, Stat, Tech
Beckett	Lrng, Stat
Belloso	Aff, Stat
Brandsma	Stat, Lrng
Creed	Comp, Stat, GCal,
Drier	Prob, Comp
Lee	Stat, Lrnr, Att
Miller	Lrng, Stat
Myers	MMed, DscM
Russell	Prob, PS, Vis

Articles

Lehrer	Rep, Stat
Pratt	Prob, Comp
Watson	Stat
Watson	Lrng, Stat

Paper

High	Stat, Anx

Gender differences (Gend)

Dissertations

Ai	Ach, Att, Gend
Browning	Eqty, Gend, Assm
Chan	Gend, Eqty, Soc
Chizhik	Grpg, Gend, Ethn
Conner	Gend, Att
Fierros	Gend, Assm, PS
Fortner	Gend, Ach
Fredricks	Soc, Gend
Graham	Blf, Gend, Lrng
Harder	Gend, Anx, Eqty
Haynes	Gend, Comp, Att
Isaacson	Calc, Gend, Vis
Johnson	Gend, Ach, Att,
Lucas	Grpg, Att, Gend
Pitsch	Gend, Tchr, Tchg
Robichaux	Vis, Soc, Gend
Rowe	Alg, Gend, Att
Scott	Att, Gend, PS
Shavalier	Vis, CAI, Gend
Smith	Gend, Att, Arth
Thomas	Ethn, Gend, Att
Timmel	Gend, Att, Blf
Vincent	Gend, Att, Comm
Wiken	Blf, Lrng, Gend

Papers

Capraro	Ach, Gend, Ethn
Fennema	Revw, Gend
Hammrich	Gend, Knw, Att
Ramirez	Revw, Gend, Ethn
Tapia	Gend, Ethn, Att

Geometry (Geom); Measurement (Meas); Spatial visualization (Vis)

Dissertations

Bell	CAI, Rep, Vis
Breen	CAI, Geom, Lrng
Breunlin	Geom, CAI
Coffland	Geom, Tech, Clln
Drew	Curr, Tchg, Geom
Guillen Soler	Geom, PS, Lrng
Hebert	Patt, Alg, Geom
Isaacson	Calc, Gend, Vis
Lee	Prf, Geom
McNabb	Geom, Patt, Vis
Nissen	Geom, Curr, Matl
Rahim	Meas, Geom, Lrng
Rahim	Meas, Geom, Lrng
Robichaux	Vis, Soc, Gend
Russell	Prob, PS, Vis
Seaman	Vis, Gcal, Calc
Shavalier	Vis, CAI, Gend
Silfverberg	Geom, Lrng
Solano Alvarado	Lrng, Vis, Geom
Werthessen	Geom, Vis, Att
Willner	Geom, Lrng, Writ
Wottreng	Geom, Lrng

Articles

Clements	Meas, Gift
Enochs	Meas, Prsv
Grover	Geom, Curr
Jacobson	Geom, Insv
Lawson	Geom, Meas, PS
Outhred	Meas, Manp
Pickreign	Curr, Geom

Papers

Cavanagh	GCal, Alg, Vis
Hassan	TKnw, Alg, Vis

Gifted (students) (Gift); Knowledge (student's) (Knw); Learners (characteristics of) (Lrnr); Learning disabled (LD); Learning style, cognitive style (Styl); Misconceptions (Mscn)

Dissertations

Alsawaie	CAI, AdvM, Styl
Butler	LD, Frac, Rep
Calhoon	LD, Assm
de Groot	Curr, Lrng, Styl
Eisele	Anx, Ach, Styl
Erickson	LD, Ach
Fornof	LD, Lrng, Arth
Gasiorowski	CAI, Styl, Ach
Glickman	CAI, Knw
Haverty	PS, Arth, Knw
Henthorne	Att, Lrnr, Clln
Johnson	Ach, Clln, LD
Jones	LD, Alg
Kahan	Prf, Curr, Mscn
Kazemi	Insv, Knw, Tchg

Kindel	Styl, Att
Lee	Lrng, LD
Lee	Stat, Lrnr, Att
McCall	Lrng, LD, Arth
Moore	Tchg, Lrng, Styl
Oberer	Styl, Att
Ortiz	Soc, Lrnr, Ach
Owens	Ach, Styl, Att
Pullano	Mscn, Gcal, Alg
Rho	Mscn, Grpg, CAI
Rotigel	Ach, Gift
Rowell	M/D, D/R, Knw
Roy	NSns, LD, A/S
Ryan	Plan, Lrnr
Sakamoto	LD, Manp, Tchg
Shen	LD, Tchg
Sloan	Prsv, Anx, Styl
Steck	Lrng, LD, NSns
Stenger	Att, Styl, Blf
Tripp	D/R, Mscn
Walker	Blf, Knw, Curr
Washington	Gift, Ach, Soc
Westreich	Lrng, Styl
Woggon	Lrng, Knw
Wolfe	Lrnr, Lrng
Wood	Gift, Ach, Aff
Yuan	Styl, Clln, Alg
Zorroza Ruesta	Knw, Lrng, PS

Articles

Baker	Calc, Mscn
Baranchik	Assm, Knw
Clements	Meas, Gift
Cox	Assm, Knw
Montis	LD, Lang
Nathan	Alg, Tchr, Mscn
Nicaise	Styl, Att
Zwaneveld	Knw, Alg

Papers

Abouchedid	Alg, Mscn
Caniglia	Blf, Knw
Hammrich	Gend, Knw, Att
Seo	Att, Styl
Spielman	Ethn, Att, Styl

Implications of research, interpretations of research (Impl); Research issues, methods (Rsch); Reviews of research (Revw)

Dissertations

Braddy	Impl, Rep
Haug	Curr, Impl
McGatha	Rsch, Plan
Ridge	Assm, Rsch
Thompson	Rsch

Article

Pang	Curr, Impl, IC

Papers

Bana	Tchg, Curr, Rsch
Fennema	Revw, Gend
Fernandez	Rsch, Curr, Tchg
Fraenkel	Rsch, Curr, Tchg
Grouws	Revw, Ach
Mewborn	TKnw, Revw
Ramirez	Revw, Gend,
Ethn	

Inservice teacher education, professional development (Insv); Preservice teacher education (Prsv)

Dissertations

Arp	Prsv, TAtt
Bay	Curr, Insv, Plan
Berger	Insv, TAtt, Tchg
Biagetti	Insv, Alg, Comm
Bluette	Insv, Tchg, Ach
Bote	TBlf, Tatt, Prsv
Carvan	Curr, Comm., Insv
Chambers	Curr, Insv
Craig	Prsv, PS, TAtt
Crockett	TAtt, Insv, TKnw
Diamantis	Prsv, Att, Manp
D'Souza	Insv, Ach
Duah-Agyeman	Insv, TKnw, Tchr
Eisenhardt	Insv, Curr, TKnw
Ferdinand	Prsv, Att, Blf
Gann	Prsv, TBlf, Tchg
Geist	Curr, TKnw, Insv
Harnish	Insv, Prsv, TKnw
Kazemi	Insv, Knw, Tchg
Koehler	Prsv, MMed
Krows	Prsv, Blf, Att
Lee	Prsv, Mtcg TAtt
Liptak	Insv, TKnw, TBlf
McAdam	Prsv, TKnw, Manp
Miller	Prsv, TBlf, TKnw,
O'Donnell	Prsv, Lrng
Ohana	Prsv, Curr
Priselac	TAtt, Insv, Curr
Rodeheaver	Prsv, Comm
Sassano	Prsv, Curr, Mtl,
Siebert	Prsv, Tknw, TBlf
Sloan	Prsv, Anx, Styl
Smith	Prsv, TKnw, IC
Stone	Frac, Prsv, TKnw
Thomas	Prsv, TKnw

Articles

Davis	Lrng, Prsv
Ebby	TKnw, Prsv
Enochs	Meas, Prsv
Friel	Prsv, Tech
Jacobson	Geom, Insv
Tirosh	TKnw, Prsv

Papers

Adams	Insv, Tchg, TBlf
Lin	Insv, TBlf, Tchg
Mewborn	TBlf, Prsv
Rodriguez	Tchg, Insv

Language, psycholinguistics (Lang); Representations, modeling (Rep)

Dissertations

Bell	CAI, Rep, Vis
Braddy	Impl, Rep
Butler	LD, Frac, Rep
Dimiceli	Gcal, Calc, Rep
Hall	Lrng, Tchg, Rep
Kloster	Alg, Lrng, Rep
Lingefjard	Tech, Rep, TKnw
Pinon	Alg, Manp, Rep
Selzer	Lrng, Alg, Rep
Seo	Curr, Rep, PS
Shaffer	Curr, Tech, Rep

Smith	Lrng, Lang, PS
Torres	Ethn, Lang
Wyeth	Calc, Alg, Rep

Articles

Leach	Lang, Tchg
Lehrer	Rep, Stat
Montis	LD, Lang
Ozgun-Koca	CAI, Rep

Papers

Pepin	Matl, Lang, CC
Roti	Lang, Matl, Rep

Learning, learning theories, cognitive development (Lrng); Philosophy, epistemology (Phil)

Dissertations

Beckett	Lrng, Stat
Biddlecomb	Lrng, Frac, Whol
Brandsma	Stat, Lrng
Breen	CAI, Geom, Lrng
Chung	Lrng, M/D, Patt
Cottrill	Calc, Lrng
Davila Hernandez	Calc, Lrng, Grpg
de Groot	Curr, Lrng, Styl
Durmus	GCal, Lrng, Alg
Emfinger	M/D, Lrng, PS
Fornof	LD, Lrng, Arth
Garcelon	Lrng, TKnw
Gningue	Manp, Lrng, Alg
Graham	Blf, Gend, Lrng
Guillen Soler	Geom, PS, Lrng
Hall	Lrng, Tchg, Rep
Hsieh	Arth, Alg, Lrng
Jones	Curr, Lrng, CIIn
Kloster	Alg, Lrng, Rep
Lawler	Lrng, Tchg, GCal
Lee	Lrng, LD
Makanong	Lrng, Alg, PS
Matthee	Lrng, Tech, Grpg
Matthews	Curr, Tchg, Lrng
McCall	Lrng, LD, Arth
McCarthy	Calc, Lrng
Miller	Lrng, Stat
Miller	Lrng, Calc, Tchg
Moore	Tchg, Lrng, Styl
Moss	Frac, RaPc, Lrng
Novinger	Lrng, Tchg, Oral
O'Connor	Oral, Comm, Lrng
O'Donnell	Prsv, Lrng
Olkun	Manp, Lrng, Oral
Painter	Soc, Lrng, CIIn
Park	NSns, CC, Lrng
Rahim	Meas, Geom, Lrng
Reed	PlcV, Curr, Lrng
Robinson	A/S, Oral, Lrng
Selzer	Lrng, Alg, Rep
Shih	Frac, Lrng
Silfverberg	Geom, Lrng
Smith	Lrng, Att
Smith	Lrng, Lang, PS
Solano Alvarado	Lrng, Vis, Geom
Steck	Lrng, LD, NSns
Thompson	Curr, Phil
Thurber	Assm, Lrng
Van Eck	Lrng, Att
West	Lrng, Tchg
Westreich	Lrng, Styl
Wiken	Blf, Lrng, Gend
Willner	Geom, Lrng, Writ
Woggon	Lrng, Knw
Wolfe	Lrnr, Lrng
Wottreng	Geom, Lrng
Ziegler	Lrng, Tchg
Zorroza Ruesta	Knw, Lrng, PS

Articles

Boaler	Lrng, Ps
Davis	Lrng, Prsv
Krummheuer	Lrng, CC
Watson	Lrng, Stat

Paper

Merenluoto	Lrng, NSns

Metacognition (Mtcg); Patterns, relationships, math connections (Patt); Problem solving, reasoning (PS); Proof, justification (Prf)

Dissertations

Chung	Lrng, M/D, Patt
Craig	Prsv, PS, TAtt
Cuellar	PS, Ethn
Dodsworth	PS, Blf
Eliaser	Blf, Prf
Emfinger	M/D, Lrng, PS
Fierros	Gend, Assm, PS
Guillen Soler	Geom, PS, Lrng
Haarer	Comp, Mtcg, Assm
Haverty	PS, Arth, Knw
Hebert	Patt, Alg, Geom
Kahan	Prf, Curr, Mscn
Knuth	Prf, TKnw, TBlf
Lee	Prf, Geom
Liberant	M/D, PS, Grpg
Makanong	Lrng, Alg, PS
McNabb	Geom, Patt, Vis
Mintz	CAI, Arth, PS
Ribble	Patt, Aff, Soc
Russell	Prob, PS, Vis
Scott	Att, Gend, PS
Seo	Curr, Rep, PS
Shipley	Prf, AdvM
Smith	CC, PS
Smith	Lrng, Lang, PS
Zorroza Ruesta	Knw, Lrng, PS

Articles

Boaler	Lrng, Ps
De Abreu	CC, PS
Healy	Prf, Alg
Johanning	Grpg, Writ, PS
Lawson	Geom, Meas/ PS
Lubienski	PS, Eqty
Ridlon	Curr, PS
Sfard	Comm, Mtcg
Swafford	Alg, PS
Zan	Ach, Mtcg

Papers

Jackson	PS, Curr
Shama	IC, PS, Grpg

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